

PROJECT TABLE OF CONTENTS

DIVISION 01 - GENERAL REQUIREMENTS

01090 SOURCES FOR REFERENCE PUBLICATIONS
01320 PROJECT SCHEDULE
01330 SUBMITTAL PROCEDURES
01430 ENVIRONMENTAL PROTECTION
01451 CONTRACTOR QUALITY CONTROL
01900 MISCELLANEOUS PROVISIONS

DIVISION 02 - SITE WORK

02220 DEMOLITION

DIVISION 04 - MASONRY

04200 CONCRETE MASONRY UNITS

DIVISION 06 - WOODS & PLASTICS

06100 ROUGH CARPENTRY
06200 FINISH CARPENTRY

DIVISION 07 - THERMAL & MOISTURE PROTECTION

07900 JOINT SEALING

DIVISION 09 - FINISHES

09900 PAINTING, GENERAL

DIVISION 13 - SPECIAL CONSTRUCTION

13283 LEAD-BASED PAINT (LBP) ABATEMENT AND DISPOSAL

-- End of Project Table of Contents --

SECTION TABLE OF CONTENTS

DIVISION 01 - GENERAL REQUIREMENTS

SECTION 01090

SOURCES FOR REFERENCE PUBLICATIONS

PART 1 GENERAL

1.1 REFERENCES

1.2 ORDERING INFORMATION

-- End of Section Table of Contents --

SECTION 01090

SOURCES FOR REFERENCE PUBLICATIONS

PART 1 GENERAL

1.1 REFERENCES

Various publications are referenced in other sections of the specifications to establish requirements for the work. These references are identified in each section by document number, date and title. The document number used in the citation is the number assigned by the sponsoring organization, e.g. ASTM B 564 Nickel Alloy Forgings. However, when the sponsoring organization has not assigned a number to a document, an identifying number has been assigned for reference purposes.

1.2 ORDERING INFORMATION

The addresses of the organizations whose publications are referenced in other sections of these specifications are listed below, and if the source of the publications is different from the address of the sponsoring organization, that information is also provided. Documents listed in the specifications with numbers which were not assigned by the sponsoring organization should be ordered from the source by title rather than by number.

AMERICAN CONFERENCE OF GOVERNMENTAL INDUSTRIAL HYGIENISTS (ACGIH)

1330 Kemper Meadow Dr.
Suite 600
Cincinnati, OH 45240
Ph: 513-742-2020
Fax: 513-742-3355
Internet: www.acgih.org
E-mail: pubs@acgih.org
AOK6/99

AMERICAN FOREST & PAPER ASSOCIATION (AF&PA)

American Wood Council
ATTN: Publications Dept.
1111 Nineteenth St. NW, Suite 800
Washington, DC 20036
Ph: 800-294-2372
Fax: 202-463-2785
Internet: <http://www.afandpa.org>
Order From: American Wood Council
P.O. Box 5364
Madison, WI 53705-5364
Ph: 800-890-7732
Fax: 608-231-2152
AOK6/99

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

100 Barr Harbor Drive

West Conshohocken, PA 19428-2959

Ph: 610-832-9585

Fax: 610-832-9555

Internet: www.astm.org

NOTE: The annual ASTM Book of Standards (66 Vol) is available for \$3500.00. Prices of individual standards vary.
AOK6/99

AMERICAN WOOD-PRESERVERS' ASSOCIATION (AWPA)

3246 Fall Creek Highway, Suite 1900

Grandbury, TX 76049-7979

Ph: 817-326-6300

Fax: 817-326-6306

NOTE: AWPAs Book of Standards is published yearly @\$75.00; individual standards may be ordered separately for \$12.00 to \$28.00 each.

AOK6/99

CALIFORNIA REDWOOD ASSOCIATION (CRA)

405 Enfrente Ave., Suite 200

Novato, CA 94949

Ph: 415-382-0662

Fax: 415-382-8531

AOK6/99

CODE OF FEDERAL REGULATIONS (CFR)

Order from:

Government Printing Office

Washington, DC 20402

Ph: 202-512-1800

Fax: 202-275-7703

Internet: <http://www.pls.com:8001/his/cfr.html>

AOK6/99

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT (HUD)

Order from:

HUD User

P.O. Box 6091

Rockville, MD 20850

Ph: 800-245-2691

e-mail: Huduser@aspensys.com

AOK6/99

ENGINEERING MANUALS (EM)

USACE Publications Depot

Attn: CEIM-SP-D

2803 52nd Avenue

Hyattsville, MD 20781-1102

Ph: 301-394-0081

AOK6/99

FEDERAL SPECIFICATIONS (FS)

Order from:

General Services Administration
Federal Supply Service Bureau
470 L'Enfant Plaza, S.W.
Washington, DC 20407
Ph: 202-619-8925
Fax: 202-619-8978
Internet: <http://pub.fss.gsa.gov/>
AOK6/99

NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH (NIOSH)

Mail Stop C-13
4676 Columbia Parkway
Cincinnati, OH 45226-1998
Ph: 800-356-4676
Internet: <http://www.cdc.gov/niosh/homepage.html>
To order pubs for which a fee is charged, order from:
Superintendent of Documents
Government Printing Office
Washington, DC 20402-9325
Ph: 202-512-1800
Fax: 202-512-2250
AOK6/99

WEST COAST LUMBER INSPECTION BUREAU (WCLIB)

P.O. Box 23145
Portland, OR 97281
Ph: 503-639-0651
Fax: 503-684-8928
AOK6/99

WESTERN WOOD PRODUCTS ASSOCIATION (WWPA)

Yeon Bldg.
522 SW 5th Ave.
Suite 500
Portland, OR 97204-2122
Ph: 503-224-3930
Fax: 503-224-3934
AOK6/99

WOOD MOULDING AND MILLWORK PRODUCERS ASSOCIATION (WMPA)

507 First Street
Woodland, CA 95695
Ph: 916-661-9591
Fax: 916-661-9586
AOK6/99

-- End of Section --

SECTION TABLE OF CONTENTS

DIVISION 01 - GENERAL REQUIREMENTS

SECTION 01320

PROJECT SCHEDULE

PART 1 GENERAL

- 1.1 SUBMITTALS
- 1.2 QUALIFICATIONS

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION

- 3.1 GENERAL
- 3.2 BASIS FOR PAYMENT
- 3.3 PROJECT SCHEDULE
 - 3.3.1 Use of the Critical Path Method
 - 3.3.2 Level of Detail Required
 - 3.3.2.1 Activity Durations
 - 3.3.2.2 Procurement Activities
 - 3.3.2.3 Government Activities
 - 3.3.2.4 Bid Item
 - 3.3.2.5 Feature of Work
 - 3.3.3 Scheduled Project Completion
 - 3.3.3.1 Project Start Date
 - 3.3.3.2 Constraint of Last Activity
 - 3.3.3.3 Early Project Completion
 - 3.3.4 Interim Completion Dates
 - 3.3.5 Default Progress Data Disallowed
 - 3.3.6 Out-of-Sequence Progress
 - 3.3.7 Extended Non-Work Periods
 - 3.3.8 Negative Lags
- 3.4 PROJECT SCHEDULE SUBMISSIONS
 - 3.4.1 Preliminary Project Schedule Submission
 - 3.4.2 Initial Project Schedule Submission
 - 3.4.3 Periodic Schedule Updates
- 3.5 SUBMISSION REQUIREMENTS
 - 3.5.1 Data Disks
 - 3.5.1.1 File Medium
 - 3.5.1.2 Disk Label
 - 3.5.1.3 File Name
 - 3.5.2 Narrative Report
 - 3.5.3 Approved Changes Verification
 - 3.5.4 Schedule Reports
 - 3.5.4.1 Activity Report
 - 3.5.4.2 Logic Report
 - 3.5.4.3 Total Float Report
 - 3.5.4.4 Earnings Report
 - 3.5.5 Network Diagram

- 3.5.5.1 Continuous Flow
 - 3.5.5.2 Project Milestone Dates
 - 3.5.5.3 Critical Path
 - 3.5.5.4 Banding
 - 3.5.5.5 S-Curves
 - 3.6 PERIODIC PROGRESS MEETINGS
 - 3.6.1 Meeting Attendance
 - 3.6.2 Update Submission Following Progress Meeting
 - 3.6.3 Progress Meeting Contents
 - 3.6.3.1 Start and Finish Dates
 - 3.6.3.2 Time Completion
 - 3.6.3.3 Cost Completion
 - 3.6.3.4 Logic Changes
 - 3.6.3.5 Other Changes
 - 3.7 REQUESTS FOR TIME EXTENSIONS
 - 3.7.1 Justification of Delay
 - 3.7.2 Submission Requirements
 - 3.7.3 Additional Submission Requirements
 - 3.8 DIRECTED CHANGES
 - 3.9 OWNERSHIP OF FLOAT
- End of Section Table of Contents --

SECTION 01320
PROJECT SCHEDULE

PART 1 GENERAL

1.1 SUBMITTALS

Government approval is required for submittals with a "GA" designation; submittals having an "FIO" designation are for information only. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-07 Schedules

Preliminary Project Schedule; GA.
Initial Project Schedule; GA.
Periodic Schedule Updates; GA.

Two copies of the schedules showing codes, values, categories, numbers, items, etc., as required.

SD-08 Statements

Qualifications; GA.

Documentation showing qualifications of personnel preparing schedule reports.

SD-09 Reports

Narrative Report; FIO.
Schedule Reports; FIO.

Two copies of the reports showing numbers, descriptions, dates, float, starts, finishes, durations, sequences, etc., as required.

1.2 QUALIFICATIONS

The Contractor shall designate an authorized representative who shall be responsible for the preparation of all required project schedule reports. This person shall have previously created and reviewed computerized schedules. Qualifications of this individual shall be submitted to the Contracting Officer for review with the Preliminary Project Schedule submission

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION

3.1 GENERAL

Pursuant to the Contract Clause, SCHEDULE FOR CONSTRUCTION CONTRACTS, a Project Schedule as described below shall be prepared. The scheduling of construction shall be the responsibility of the Contractor. Contractor

management personnel shall actively participate in its development. Subcontractors and suppliers working on the project shall also contribute in developing and maintaining an accurate Project Schedule. The approved Project Schedule shall be used to measure the progress of the work, to aid in evaluating time extensions, and to provide the basis of all progress payments.

3.2 BASIS FOR PAYMENT

The schedule shall be the basis for measuring Contractor progress. Lack of an approved schedule or scheduling personnel shall result in an inability of the Contracting Officer to evaluate Contractor progress for the purposes of payment. Failure of the Contractor to provide all information, as specified below, shall result in the disapproval of the entire Project Schedule submission and the inability of the Contracting Officer to evaluate Contractor progress for payment purposes. In the case where Project Schedule revisions have been directed by the Contracting Officer and those revisions have not been included in the Project Schedule, then the Contracting Officer may hold retainage up to the maximum allowed by contract, each payment period, until revisions to the Project Schedule have been made.

3.3 PROJECT SCHEDULE

The computer software system utilized by the Contractor to produce the Project Schedule shall be capable of providing all requirements of this specification. Failure of the Contractor to meet the requirements of this specification shall result in the disapproval of the schedule. Manual methods used to produce any required information shall require approval by the Contracting Officer.

3.3.1 Use of the Critical Path Method

The Critical Path Method (CPM) of network calculation shall be used to generate the Project Schedule. The Contractor shall provide the Project Schedule in either the Precedence Diagram Method (PDM) or the Arrow Diagram Method (ADM).

3.3.2 Level of Detail Required

With the exception of the preliminary schedule submission, the Project Schedule shall include an appropriate level of detail. Failure to develop or update the Project Schedule or provide data to the Contracting Officer at the appropriate level of detail, as specified by the Contracting Officer, shall result in the disapproval of the schedule. The Contracting Officer will use, but is not limited to, the following conditions to determine the appropriate level of detail to be used in the Project Schedule.

3.3.2.1 Activity Durations

Contractor submissions shall follow the direction of the Contracting Officer regarding reasonable activity durations. Reasonable durations are those that allow the progress of activities to be accurately determined between payment periods (usually less than 2 percent of all non-procurement activities' Original Durations shall be greater than 20 days).

3.3.2.2 Procurement Activities

Tasks related to the procurement of long lead materials or equipment shall be included as separate activities in the project schedule. Long lead materials and equipment are those materials that have a procurement cycle of over 90 days. Examples of procurement process activities include, but are not limited to: submittals, approvals, procurement, fabrication, delivery, installation, and testing.

3.3.2.3 Government Activities

Government and other agency activities that could impact progress shall be shown. These activities include, but are not limited to: approvals, inspections, and notice to proceed for phasing requirements.

3.3.2.4 Bid Item

All activities shall be identified in the project schedule by the Bid Item to which the activity belongs. An activity shall not contain work in more than one bid item. The bid item for each appropriate activity shall be identified by the Bid Item Code.

3.3.2.5 Feature of Work

All activities shall be identified in the project schedule according to the feature of work to which the activity belongs. Feature of work refers, but is not limited to a work breakdown structure for the project. The feature of work for each activity shall be identified by the Feature of Work Code.

3.3.3 Scheduled Project Completion

The schedule interval shall extend from notice-to-proceed to the contract completion date.

3.3.3.1 Project Start Date

The schedule shall start no earlier than the date that the Notice to Proceed (NTP) was acknowledged. The Contractor shall include as the first activity in the project schedule an activity called "Start Project". The "Start Project" activity shall have: a "ES" constraint, a constraint date equal to the date that the NTP was acknowledged, and a zero day duration.

3.3.3.2 Constraint of Last Activity

Completion of the last activity in the schedule shall be constrained by the contract completion date. Calculation on project updates shall be such that if the early finish of the last activity falls after the contract completion date, then the float calculation shall reflect a negative float on the critical path. The Contractor shall include as the last activity in the project schedule an activity called "End Project". The "End Project" activity shall have: a "LF" constraint, a constraint date equal to the completion date for the project, and a zero day duration.

3.3.3.3 Early Project Completion

In the event the project schedule shows completion of the project prior to the contract completion date, the Contractor shall identify those activities that have been accelerated and/or those activities that are scheduled in parallel to support the Contractor's "early" completion. Contractor shall specifically address each of the activities noted at every project schedule update period to assist the Contracting Officer in

evaluating the Contractor's ability to actually complete prior to the contract period.

3.3.4 Interim Completion Dates

Contractually specified interim completion dates shall also be constrained to show negative float if the early finish date of the last activity in that phase falls after the interim completion date.

3.3.5 Default Progress Data Disallowed

Actual Start and Finish dates shall not be automatically updated by default mechanisms that may be included in CPM scheduling software systems. Actual Start and Finish dates on the CPM schedule shall match those dates provided from Contractor Quality Control Reports. Failure of the Contractor to document the Actual Start and Finish dates on the Daily Quality Control report for every in-progress or completed activity and ensure that the data contained on the Daily Quality Control reports is the sole basis for schedule updating shall result in the disapproval of the Contractor's schedule and the inability of the Contracting Officer to evaluate Contractor progress for payment purposes.

3.3.6 Out-of-Sequence Progress

Activities that have posted progress without predecessors being completed (Out-of-Sequence Progress) will be allowed only on a case-by-case approval of the Contracting Officer. The Contracting Officer may direct that changes in schedule logic be made to correct any or all out-of-sequence work.

3.3.7 Extended Non-Work Periods

Designation of Holidays to account for non-work periods of over 5 days will not be allowed. Non-work periods of over 5 days shall be identified by addition of activities that represent the delays. Modifications to the logic of the project schedule shall be made to link those activities that may have been impacted by the delays to the newly added delay activities.

3.3.8 Negative Lags

Lag durations contained in the project schedule shall not have a negative value.

3.4 PROJECT SCHEDULE SUBMISSIONS

The Contractor shall provide the submissions as described below. The data disk, reports, and network diagrams required for each submission are contained in paragraph SUBMISSION REQUIREMENTS.

3.4.1 Preliminary Project Schedule Submission

The Preliminary Project Schedule, defining the Contractor's planned operations for the first 90 calendar days shall be submitted for approval within 20 calendar days after Notice to Proceed is acknowledged. The approved preliminary schedule shall be used for payment purposes not to exceed 90 calendar days after Notice to Proceed.

3.4.2 Initial Project Schedule Submission

The Initial Project Schedule shall be submitted for approval within 60 calendar days after Notice to Proceed. The schedule shall provide a reasonable sequence of activities which represent work through the entire project and shall be at a reasonable level of detail.

3.4.3 Periodic Schedule Updates

Based on the result of progress meetings, specified in "Periodic Progress Meetings," the Contractor shall submit periodic schedule updates. These submissions shall enable the Contracting Officer or to assess Contractor's progress. If the Contractor fails or refuses to furnish the information and project schedule data, which in the judgement of the Contracting Officer or authorized representative, is necessary for verifying the contractor's progress, the Contractor shall be deemed not to have provided an estimate upon which progress payment may be made.

3.5 SUBMISSION REQUIREMENTS

The following items shall be submitted by the Contractor for the initial submission, and every periodic project schedule update throughout the life of the project:

3.5.1 Data Disks

One data disk or one set of data disks containing the project schedule shall be provided. Data on the disks shall be in the P3 format or other format which conforms to the format specified in the attached Standard Data Exchange Format specification (attached at the end of this Project Schedule specification).

3.5.1.1 File Medium

Required data shall be submitted on 3.5-inch disks, formatted to hold 1.44 MB of data, under the MS-Windows operating system.

3.5.1.2 Disk Label

A permanent exterior label shall be affixed to each disk submitted. The label shall indicate the type of schedule (Initial, Update, or Change), full contract number, project name, project location, data date, name and telephone number or person responsible for the schedule, and the operating system and version used to format the disk.

3.5.1.3 File Name

Each file submitted shall have a name related to either the schedule data date, project name, or contract number. The Contractor shall develop a naming convention that will ensure that the names of the files submitted are unique. The Contractor shall submit the file naming convention to the Contracting Officer for approval.

3.5.2 Narrative Report

A Narrative Report shall be provided with each update of the project schedule. This report shall be provided as the basis of the Contractor's progress payment request. The Narrative Report shall include: a description of activities along the critical path(s), a description of current and anticipated problem areas or delaying factors and their impact, and an explanation of corrective actions taken.

3.5.3 Approved Changes Verification

Only project schedule changes that have been previously approved by the Contracting Officer shall be included in the schedule submission. The Narrative Report shall specifically reference, on an activity by activity basis, all changes made since the previous period and relate each change to documented, approved schedule changes.

3.5.4 Schedule Reports

The format for each activity for the schedule reports listed below shall contain: Activity Numbers, Activity Description, Original Duration, Remaining Duration, Early Start Date, Early Finish Date, Late Start Date, Late Finish Date, Total Float. Actual Start and Actual Finish Dates shall be printed for those activities in progress or completed.

3.5.4.1 Activity Report

A list of all activities sorted according to activity number or "I-NODE" AND "J-NODE" and then sorted according to Early Start Date. For completed activities the Actual Start Date shall be used as the secondary sort.

3.5.4.2 Logic Report

A list of Preceding and Succeeding activities for every activity in ascending order by activity number and then sorted according to Early Start Date. For completed activities the Actual Start Date shall be used as the secondary sort.

3.5.4.3 Total Float Report

A list of all activities sorted in ascending order of total float. Activities which have the same amount of total float shall be listed in ascending order of Early Start Dates.

3.5.4.4 Earnings Report

A compilation of the Contractor's Total Earnings on the project from the Notice to Proceed until the most recent Monthly Progress Meeting. This report shall reflect the Earnings of specific activities based on the agreements made in the field and approved between the Contractor and Contracting Officer at the most recent Monthly Progress Meeting. Provided that the Contractor has provided a complete schedule update, this report shall serve as the basis of determining Contractor Payment. Activities shall be grouped by bid item and sorted by activity numbers. This report shall: sum all activities in a bid item and provide a bid item percent; and complete and sum all bid items to provide a total project percent complete. The printed report shall contain, for each activity: Activity Number or "i-node" and "j-node", Activity Description, Original Budgeted Amount, Total Quantity, Quantity to Date, Percent Complete (based on cost), Earnings to Date.

3.5.5 Network Diagram

The network diagram shall be required on the initial schedule submission and on monthly schedule update submissions. The network diagram shall depict and display the order and interdependence of activities and the sequence in which the work is to be accomplished. The activity or event

number, description, duration, and estimated earned value shall be shown on the diagram. The Contracting Officer will use, but is not limited to, the following conditions to review compliance with this paragraph:

3.5.5.1 Continuous Flow

Diagrams shall show a continuous flow from left to right with no arrows from right to left.

3.5.5.2 Project Milestone Dates

Dates shall be shown on the diagram for start of project, any contract required interim completion dates, and contract completion dates.

3.5.5.3 Critical Path

The critical path shall be clearly shown.

3.5.5.4 Banding

Activities shall be grouped to assist in the understanding of the activity sequence. Typically, this flow will group activities by category of work, work area and/or responsibility.

3.5.5.5 S-Curves

Earnings curves showing projected early and late earnings and earnings to date.

3.6 PERIODIC PROGRESS MEETINGS

Progress meetings to discuss payment shall include a monthly onsite meeting or other regular intervals mutually agreed to at the preconstruction conference. During this meeting the Contractor shall describe, on an activity by activity basis, all proposed revisions and adjustments to the project schedule required to reflect the current status of the project. The Contracting Officer will approve activity progress, proposed revisions, and adjustments as appropriate.

3.6.1 Meeting Attendance

The Contractor's Project Manager and Scheduler shall attend the regular progress meeting.

3.6.2 Update Submission Following Progress Meeting

A complete update of the project schedule containing all approved progress, revisions, and adjustments, based on the regular progress meeting, shall be submitted not later than 4 working days after the monthly progress meeting.

3.6.3 Progress Meeting Contents

Update information, including Actual Start Dates, Actual Finish Dates, Remaining Durations, and Cost-to-Date shall be subject to the approval of the Contracting Officer. The following is a minimum set of items which the Contractor shall address, on an activity by activity basis, during each progress meeting.

3.6.3.1 Start and Finish Dates

The Actual Start and Actual Finish dates for each activity currently in-progress or completed activities.

3.6.3.2 Time Completion

The estimated Remaining Duration for each activity in-progress. Time-based progress calculations must be based on Remaining Duration for each activity.

3.6.3.3 Cost Completion

The earnings for each activity started. Payment will be based on earnings for each in-progress or completed activity. Payment for individual activities will not be made for work that contains quality defects. A portion of the overall project amount may be retained based on delays of activities.

3.6.3.4 Logic Changes

All logic changes pertaining to Notice to Proceed on change orders, change orders to be incorporated into the schedule, contractor proposed changes in work sequence, corrections to schedule logic for out-of-sequence progress, lag durations, and other changes that have been made pursuant to contract provisions shall be specifically identified and discussed.

3.6.3.5 Other Changes

Other changes required due to delays in completion of any activity or group of activities include: 1) delays beyond the Contractor's control, such as strikes and unusual weather. 2) delays encountered due to submittals, Government Activities, deliveries or work stoppages which make re-planning the work necessary, and 3) a schedule which does not represent the actual prosecution and progress of the work.

3.7 REQUESTS FOR TIME EXTENSIONS

In the event the Contractor requests an extension of the contract completion date, he shall furnish such justification, project schedule data and supporting evidence as the Contracting Officer may deem necessary for a determination as to whether or not the Contractor is entitled to an extension of time under the provisions of the contract. Submission of proof of delay, based on revised activity logic, duration, and costs (updated to the specific date that the delay occurred) is obligatory to any approvals.

3.7.1 Justification of Delay

The project schedule shall clearly display that the Contractor has used, in full, all the float time available for the work involved with this request. The Contracting Officer's determination as to the number of allowable days of contract extension shall be based upon the project schedule updates in effect for the time period in question, and other factual information. Actual delays that are found to be caused by the Contractor's own actions, which result in the extension of the schedule, will not be a cause for a time extension to the contract completion date.

3.7.2 Submission Requirements

The Contractor shall submit a justification for each request for a change

in the contract completion date of under 2 weeks based upon the most recent schedule update at the time of the Notice to Proceed or constructive direction issued for the change. Such a request shall be in accordance with the requirements of other appropriate Contract Clauses and shall include, as a minimum:

- a. A list of affected activities, with their associated project schedule activity number.
- b. A brief explanation of the causes of the change.
- c. An analysis of the overall impact of the changes proposed.
- d. A sub-network of the affected area.

Activities impacted in each justification for change shall be identified by a unique activity code contained in the required data file.

3.7.3 Additional Submission Requirements

For any requested time extension of over 2 weeks, the Contracting Officer may request an interim update with revised activities for a specific change request. The Contractor shall provide this disk within 4 days of the Contracting Officer's request.

3.8 DIRECTED CHANGES

If Notice to Proceed (NTP) is issued for changes prior to settlement of price and/or time, the Contractor shall submit proposed schedule revisions to the Contracting Officer within 2 weeks of the NTP being issued. The proposed revisions to the schedule will be approved by the Contracting Officer prior to inclusion of those changes within the project schedule. If the Contractor fails to submit the proposed revisions, the Contracting Officer may furnish the Contractor suggested revisions to the project schedule. The Contractor shall include these revisions in the project schedule until revisions are submitted, and final changes and impacts have been negotiated. If the Contractor has any objections to the revisions furnished by the Contracting Officer, the Contractor shall advise the Contracting Officer within 2 weeks of receipt of the revisions. Regardless of the objections, the Contractor shall continue to update the schedule with the Contracting Officer's revisions until a mutual agreement in the revisions is reached. If the Contractor fails to submit alternative revisions within 2 weeks of receipt of the Contracting Officer's proposed revisions, the Contractor will be deemed to have concurred with the Contracting Officer's proposed revisions. The proposed revisions will then be the basis for an equitable adjustment for performance of the work.

3.9 OWNERSHIP OF FLOAT

Float available in the schedule, at any time, shall not be considered for the exclusive use of either the Government or the Contractor.

-- End of Section --

STANDARD DATA EXCHANGE FORMAT SPECIFICATION**PART 1- GENERAL**

1. Application of This Provision: The Standard Data Exchange Format (SDEF) provides a non-proprietary protocol to exchange project planning and progress data between scheduling systems.

2. File Type and Format: The data file shall consist of a 132 character, freed format, "ASCII" file. Text shall be left-justified and numbers shall be right-justified in each field. Data records must conform, exactly, to the sequence, column position, maximum length, mandatory values, and field definitions described below to comply with the SDEF. Unless specifically stated, all numbers shall be whole numbers. Fields containing numbers shall not be zero filled. All data columns shall be separated by a single blank column. The file shall not contain blank lines.

3. Usage Notes: Where appropriate, notes regarding proper usage of systems to support the SDEF have been included in brackets ([]). These notes are included to assist users in creating SDEF-compatible files, given the variety of software systems that support the SDEF.

4. Recommended Systems: Several systems have been tested to determine the accuracy of importing and exporting SDEF files. For information on the current list of recommended systems, please contact Mr. Stan Green at HQUSACE, (202) 761-0206. Although the currently listed system have been tested other systems may also be acceptable provided those systems correctly import and export SDEF files.

5. SDEF Checker Program: A program that checks whether a file meets the SDEF is available free of charge. A copy of this program may be obtained by written request to: U.S. Army Corps of Engineers, ATTN: Mr. Bill East (CECER-FFA), P.O. Box 9005, Champaign, IL 61826-90005. A description of the SDEF Checker is also available on the Internet and CivilNet.

PART 2- SDEF SPECIFICATION

6. SDEF Organization: The SDEF shall consist of the following records provided in the exact sequence shown below:

ER 1-1-11

15 Jun 95

Paragraph Record

<u>Reference</u>	<u>Description</u>	<u>Remarks</u>
6.a	Volume Record	Mandatory First Line of File
6.b	Project Record	Mandatory Second Line of File
6.c	Calendar Record(s)	Mandatory One Record Minimum
6.d	Holiday Record(s)	Mandatory if Holidays Used
6.e	Activity Record(s)	Mandatory Records
6.f	Precedence Record(s)	Mandatory for Precedence
6.g	Unit Cost Record(s)	Mandatory for Unit Costs
6.h	Progress Record(s)	Mandatory Records
6.i	File End Record	Mandatory Last Line of Disk/File

6.a. Volume Record: The Volume Record shall be used to control the transfer of data that may not fit on a single disk. The first line in every file used to store SDEF data shall be the Volume Record. The Volume Record shall sequentially identify the number of the data transfer disk(s). The Volume Record shall have the following format:

<u>Description</u>	<u>Column</u> <u>Position</u>	<u>Max.</u> <u>Len.</u>	<u>Req.</u> <u>Value</u>	<u>Type</u>	<u>Notes</u>
RECORD IDENTIFIER	1 - 4	4	VOLM	Fixed	Filled
DISK NUMBER	6 - 7	2	√	Number	Right Justified

6.a.(1) The RECORD IDENTIFIER is the first four characters of this record. The required value for this field shall be "VOLM". The VOLM record must appear on the first line of the SDEF data file.

6.a.(2) The DISK NUMBER field shall identify the number of the data disk used to store the data exchange information. If all data may be contained on a single disk, this field shall contain the value of "1". If more disks are required, then the second disk shall contain the value "2", the third disk shall be designated with a "3", and so on. Identification of the last data disk is accomplished in the Reject End Record.

6.b. Project Record: The Project Identifier Record shall contain general project information. Because more than one SDEF file may be required for data transfer between large projects, the PROJ record shall be the second line of the first SDEF file transferred. The PROJ record shall contain information in the following format:

<u>Description</u>	<u>Column Position</u>	<u>Max. Len.</u>	<u>Req. Value</u>	<u>Type</u>	<u>Notes</u>
RECORD IDENTIFIER	1- 4	4	PROJ	Fixed	Filled
DATA DATE	6- 12	7	√	ddmmmyy	Filled
PROJECT IDENTIFIER	14-17	4	√	Alpha.	Left Justified
PROJECT NAME	19-66	48	√	Alpha.	Left Justified
CONTRACTOR NAME	68-103	36	√	Alpha.	Left Justified
ARROW OR PRECEDENCE	105-105	1	A,P	Fixed	Filled
CONTRACT NUMBER	107-112	6	√	Alpha.	Left Justified
PROJECT START	114-120	7	√	ddmmmyy	Filled
PROJECT END	122-128	7	√	ddmmmyy	Filled

6.b.(1) The RECORD IDENTIFIER is the first four characters of this record. The required value for this field shall be "PROJ". This record shall contain the general project information and indicates which scheduling method shall be used.

6.b.(2) The DATA DATE is the date of the schedule calculation. The abbreviation "ddmmmyy" refers to a date format that shall translate a date into two numbers for the day, three letters for the month, and two numbers for the year. For example, March 1, 1999 shall be translated into 01Mar99. This same convention for date formats shall be used throughout the entire data format. To ensure that dates are translated consistently, the following abbreviations shall be used for the three character month code:

Abbreviation Month

JAN	January
FEB	February
MAR	March
APR	April
MAY	May
JUN	June
JUL	July
AUG	August
SEP	September
OCT	October
NOV	November
DEC	December

15 Jun 95

6.b.(3) The **PROJECT IDENTIFIER** is a maximum four character abbreviation for the schedule. These four characters shall be used to uniquely identify the project and specific update as agreed upon by Contractor and Contracting Officer. When utilizing scheduling software these four characters shall be used to select the project. Software manufacturers shall provide information to users to ensure that data importing programs do not automatically overwrite other schedules with the same **PROJECT IDENTIFIER**.

6.b.(4) The **PROJECT NAME** field shall contain the name and location of the project edited to fit the space provided. The data appearing here shall appear on scheduling software reports. The abbreviation "Alpha." refers to an "Alphanumeric" field value and shall be used throughout the remainder of this specification.

6.b.(5) The **CONTRACTOR NAME** field shall contain the Construction Contractor's name, edited to fit the space provided.

6.b.(6) The **ARROW OR PRECEDENCE** field shall indicate which method shall be used for calculation of the schedule. The value "A" shall signify the Arrow Diagramming Method. The value "P" shall signify the Precedence Diagramming Method. The **ACTIVITY ID** field of the Activity Record shall be interpreted differently depending on the value of this field. The Precedence Record shall be required if the value of this field is "P". [Usage note: software systems may not support both arrow and precedence diagramming. It is recommended that the selection of the type of network be based on the capabilities of the software used by project partners.]

6.b.(7) The **CONTRACT NUMBER** field shall contain the contract number for the project. For example, the construction contract number DACA85-89-C-0001 shall be entered into this field as "890001".

6.b.(8) The **PROJECT START** field shall contain the date that the Contractor acknowledges the Notice to Proceed (NTP). [Usage note: Software systems may use a project start date to constrain the first activity of a network. To ensure consistent scheduling calculations across products, it is recommended that the first activity in the schedule contain an **EARLY START** constraint and a software system's **PROJECT START** date only be used to report on the project's start date.]

6.b.(9) The **PROJECT END** field shall contain the date that the Contractor plans to complete the work as approved by the Contracting Officer. [Usage note: software systems may use a project end date to constrain the last activity of a network. To ensure consistent scheduling calculations across products, it is recommended that the last activity in the schedule contain an **EARLY START** constraint and a software system's **PROJECT END** date only be used to report on the project's end date.]

6.c. Calendar Record: The Calendar Record(s) shall follow the Project Identifier Record in the first disk of data transferred. A minimum of one Calendar Record shall be required for all data exchange activity files. The format for the Calendar Record shall be as follows:

<u>Description</u>	<u>Column Position</u>	<u>Max. Len.</u>	<u>Req. Value</u>	<u>Type</u>	<u>Notes</u>
RECORD IDENTIFIER	1 - 4	4	CLDR	Fixed	Filled
CALENDAR CODE	6 - 6	1	√	Alpha.	Filled
WORKDAYS	8 - 14	7	SMTWTFS	Fixed	Filled
CALENDAR DESCRIPTION	16-45	30	√	Alpha.	Left Justified

6.c.(1) The RECORD IDENTIFIER shall always begin with "CLDR" to identify it as a Calendar Record. Each Calendar Record used shall have this identification in the first four columns. [Usage note: Systems contain a variety of calendar options. It is recommended that the least common denominator of calendar features between the systems be used as the basis for creating the SDEF file for a given project.]

6.c.(2) The CALENDAR CODE shall be used in the activity records to signify that this calendar is associated with the activity. [Usage note: Some systems do not allow for alphanumeric CALENDAR CODES, but only allow positive integers from 1 to 9. It is recommended that only positive integers be used for the CALENDAR CODE field to support the widest variety of scheduling systems.]

6.c.(3) The WORKDAYS field shall contain the work-week pattern selected with "Y", for Yes, and "N", for No. The first character shall be Sunday and the last character Saturday. An example of a typical five (5) day work-week would be NYYYYYN. A seven (7) day work-week would be YYYYYYY.

6.c.(4) The CALENDAR DESCRIPTION shall be used to briefly describe the calendar used.

6.d. Holiday Record: The Holiday Record(s) shall follow the Calendar Record(s) in the first disk of data transferred. There may be calendars without any holidays designated or several Holiday Records for each Calendar Record(s). The format for the Holiday Record shall be as follows:

<u>Description</u>	<u>Column Position</u>	<u>Max. Len.</u>	<u>Req. Value</u>	<u>Type</u>	<u>Notes</u>
RECORD IDENTIFIER	1 - 4	4	HOLI	Fixed	Filled
CALENDAR CODE	6 - 6	1	√	Alpha.	Filled
HOLIDAY DATE	8 - 14	7	√	ddmmmyy	Filled
HOLIDAY DATE	16-22	7	-	ddmmmyy	May be Filled
HOLIDAY DATE	24-30	7	-	ddmmmyy	May be Filled
HOLIDAY DATE	32-38	7	-	ddmmmyy	May be Filled
HOLIDAY DATE	40-46	7	-	ddmmmyy	May be Filled
HOLIDAY DATE	48-54	7	-	ddmmmyy	May be Filled
HOLIDAY DATE	56-62	7	-	ddmmmyy	May be Filled
HOLIDAY DATE	64-70	7	-	ddmmmyy	May be Filled
HOLIDAY DATE	72-78	7	-	ddmmmyy	May be Filled
HOLIDAY DATE	80-86	7	-	ddmmmyy	May be Filled
HOLIDAY DATE	88-94	7	-	ddmmmyy	May be Filled
HOLIDAY DATE	96-102	7	-	ddmmmyy	May be Filled
HOLIDAY DATE	104-110	7	-	ddmmmyy	May be Filled
HOLIDAY DATE	112-118	7	-	ddmmmyy	May be Filled
HOLIDAY DATE	120-126	7	-	ddmmmyy	May be Filled

6.d.(1) The RECORD IDENTIFIER shall always begin with "HOLI". Each Holiday Record used shall have this identification in the first four columns.

6.d.(2) The CALENDAR CODE indicates which work-week calendar the holidays shall be applied to. More than one HOLI record may be used for a given CALENDAR CODE.

6.d.(3) The HOLIDAY DATE shall contain the date of each individual non-work day.

6.e. Activity Records: Activity Records shall follow any Holiday Record(s). If there are no Holiday Record(s), then the Activity Records shall follow the Calendar Record(s). There shall be one Activity Record for every activity in the network. Each activity shall have one record in the following format:

<u>Description</u>	<u>Column Position</u>	<u>Max. Len.</u>	<u>Req. Value</u>	<u>Type</u>	<u>Notes</u>
RECORD IDENTIFIER	1 - 4	4	ACTV	Fixed	Filled
ACTIVITY ID	6 - 15	10	√	Integer	See Comment Below
ACTIVITY DESCR.	17-46	30	√	Alpha.	Left Justified
ACTIVITY DURATION	48-50	3	√	Integer	Right Justified
CONSTRAINT DATE	52-58	7		ddmmmyy	May be Filled
CONSTRAINT TYPE	60-61	2		ES or LF	May be Filled
CALENDAR CODE	63-63	1	√	Alpha.	Filled
HAMMOCK CODE	65-65	1	Y, blank	Fixed	May be Filled
WORKERS PER DAY	67-69	3		Integer	Right Justified
RESPONSIBILITY CODE	71-74	4		Alpha.	Left Justified
WORK AREA CODE	76-79	4		Alpha.	Left Justified
MOD OR CLAIM NO.	81-86	6		Alpha.	Left Justified
BID ITEM	88-93	6		Alpha.	Left Justified
PHASE OF WORK	95-96	2		Alpha.	Left Justified
CATEGORY OF WORK	98-98	1		Alpha.	May be Filled
FEATURE OF WORK	100-128	30		Alpha.	Left Justified

6.e.(1) The RECORD IDENTIFIER for each activity description record must begin with the four character "ACTV" code. This field shall be used for both the Arrow Diagram Method (ADM) and Precedence Diagram Method (PDM).

6.e.(2) The ACTIVITY ID consists of coding that shall differ, depending on whether the ADM or PDM method was selected in the Project Record. If the ADM method was selected then the field shall be interpreted as two right-justified fields of five (5) integers each. If the PDM method was selected the field shall be interpreted as one (1) right-justified field of ten (10) integers each. The maximum activity number allowed under this arrangement is 99999 for ADM and 9999999999 for the PDM method. [Usage note: Many systems allow alphanumeric ACTIVITY IDs. While the SDEF does not strictly, allow the use of alphanumeric values, users may agree to use the ACTIVITY ID field to exchange alphanumeric data. It is recommended that the ACTIVITY ID be restricted to integers when one or more of the systems being used for scheduling allows only integer ACTIVITY ID values.]

6.e.(3) The ACTIVITY DESCRIPTION shall be a maximum of 30 characters. Descriptions must be limited to the space provided.

6.e.(4) The ACTIVITY DURATION contains the estimated original duration for the activity on the schedule. The duration shall be based upon the work-week designated by the activity's related calendar.

6.e.(6) The CONSTRAINT TYPE field shall be used to identify the way that the scheduling system shall use the CONSTRAINT DATE to modify schedule float calculations. If there is a value in this field, then there must be a valid entry in the CONSTRAINT DATE field. The valid values for the CONSTRAINT TYPE are as follows:

<u>Code</u>	<u>Definition</u>
ES	The CONSTRAINT DATE shall replace an activity's early start date, if the early start date is prior to the CONSTRAINT DATE.
LF	The CONSTRAINT DATE shall replace an activity's late finish date, if the late finish date is after the CONSTRAINT DATE.

[Usage note: Systems provide a wide variety of constraint types that may not be supported by other systems. It is recommended that constraint types be restricted to the values above regardless of the capabilities of the various systems being used for scheduling.]

6.e.(7) The CALENDAR CODE relates this activity to an appropriate work-week calendar. The ACTIVITY DURATION must be based on the valid work-week referenced by this CALENDAR CODE field.

6.e.(8) The HAMMOCK CODE indicates that a particular activity does not have its own independent duration, but takes its start dates from the start date of the preceding activity (or node) and takes its finish dates from the finish dates of its succeeding activity (or node). If the value of the HAMMOCK CODE field is "Y", then the activity is a hammock activity.

6.e.(9) The WORKERS PER DAY shall contain the average number of workers expected to work on the activity each day the activity is in progress. If this code is required by project scheduling specifications, values for this data will be right justified. Activities without workers per day shall have a value of "0".

6.e.(10) The RESPONSIBILITY CODE shall identify the subcontractors or major trade involved with completing the work for the activity. If this code is required by project scheduling specifications, value for this data will be left justified.

6.e.(11) The WORK AREA CODE shall identify the location of the activity within the project. If this code is required by project scheduling specifications, value for this data will be left justified.

6.e.(12) The MOD OR CLAIM NUMBER shall uniquely identify activities that are added or changed on a construction contract modification, or activities that justify any claimed time extensions. If this code is required by project scheduling specifications, value for this data will be left

6.e.(13) The BID ITEM shall identify the bid item number associated with each activity. If this code is required by project scheduling specifications, value for this data will be left justified.

6.e.(14) The PHASE OF WORK shall identify the timing of a specific activity within the entire project. If this code is required by project scheduling specifications, value for this data will be left justified.

6.e.(15) The CATEGORY OF WORK shall identify the general type of work performed by every activity. If this code is required by project scheduling specifications, value for this data will be placed in the field.

6.e.(16) The FEATURE OF WORK shall identify a very broad designation of the general type of work that is being accomplished by the activity. If this code is required by project scheduling specifications, value for this data will be left justified. [Usage note: Many systems require that FEATURE OF WORK values be placed in several activity code fields. It is recommended that users review SDEF documentation to determine the correct way to use a given software system to produce the FEATURE OF WORK code.]

6.f. Precedence Record: The Precedence Record(s) shall follow the Activity Records if a Precedence Diagram Method schedule (PDM) is identified in the ARROW OR PRECEDENCE field of the Project Record. The Precedence Record has the following format:

<u>Description</u>	<u>Column</u>	<u>Max.</u>	<u>Req.</u>	<u>Type</u>	<u>Notes</u>
	<u>Position</u>	<u>Len.</u>	<u>Value</u>		
RECORD IDENTIFIER	1 - 4	4	PRED	Fixed	Filled
ACTIVITY ID	6-15	10	√	Integer	See Comment Below
PRECEDING ACTIVITY	17 -26	10	√	Integer	See Comment Below
PREDECESSOR TYPE	28-28	1	√	S, F, C	Filled
LAG DURATION	30-33	4	√	Integer	Right Justified

6.f.(1) The RECORD IDENTIFIER shall begin with the four characters "PRED" in the first four columns of the record.

6.f.(2) The ACTIVITY ID identifies the activity whose predecessor shall be specified in this record.

6.f.(3) The PRECEDING ACTIVITY number is the number of an activity that precedes the activity noted in the ACTIVITY ID field.

6.f.(4) The PREDECESSOR TYPE field indicates the type of relation that exists between the

15 Jun 95

<u>Code</u>	<u>Definition</u>
S	Start-to-Start relation
F	Finish-to-Finish relation
C	Finish-to-Start relation

[Usage note: Some systems provide additional predecessor types that may not be supported by all other systems. It is recommended that predecessor types be restricted to the values above regardless of the capabilities of the various systems being used for scheduling.]

6.f.(5) The LAG DURATION field contains the number of days delay between the preceding and current activity. [Usage note: Some systems allow negative values for the LAG DURATION. Because these values are not supported by all other systems, it is recommended that values be restricted to zero and positive integers.]

6.g. Unit Cost Record: The Unit Cost Record shall follow all Precedence Records. If the schedule utilizes the Arrow Diagram Method, then the Unit Cost Record shall follow any Activity records. There shall be one Unit Cost Record for every activity that is not a lump sum activity. [Usage note: (1) It is recommended that users who wish to exchange unit cost data contact SDEF vendor representatives to determine the ability of the software system to import/export unit cost information. (2) If the software being used by each member of the project team supports unit cost data then users may wish to conduct a trial run of the SDEF data exchange with a two or three-activity network to ensure that unit cost data transfers as expected. If problems are found please consult vendor representatives for resolution prior to exchange of full project schedules. (3) Unit cost record data does not, in most systems, result in the correct values being placed in the ACTIVITY COST and COST TO DATE fields of the Progress (PROG) Record. Users must, at this time, manually transfer the data from the Unit Cost Record to the Progress Record.

The fields for this record shall take the following format:

<u>Description</u>	<u>Column Position</u>	<u>Max. Len.</u>	<u>Req. Value</u>	<u>Type</u>	<u>Notes</u>
RECORD IDENTIFIER	1 - 4	4	UNIT	Fixed	Filled
ACTIVITY ID	6-15	10	√	Integer	See Comment Below
TOTAL QTY	17-29	13	√	Format 8.4	Right Justified
COST PER UNIT	31-43	13	√	Format 8.4	Right Justified
QTY TO DATE	45-57	13	√	Format 8.4	Right Justified
UNIT OF MEASURE	59-61	3	√	Alpha.	Left Justified

6.g.(1) The RECORD IDENTIFIER shall be identified with the four characters 'UNIT' placed in the first four columns of the record.

6.g.(2) The ACTIVITY ID for each activity shall match the format described in the activity record. Each activity may have only one Unit Cost Record.

6.g.(3) The TOTAL QTY is the total amount of material to be used in this activity. This number consists of eight digits, one decimal point and four more digits. An example of a number in this format is "11111111.1111". If decimal places are not needed this field shall still contain a ".0000" in columns 25-29. [Usage note: Many systems support a different format for this value that does not include as many decimal places. It is recommended that users determine their requirements for significant digits based on the lowest common denominator of the software systems being used for a given project.]

6.g.(4) The COST PER UNIT is the cost, in dollars and cents, for each unit to be used in this activity. This number consists of eight digits, one decimal point, and four more digits. An example of a number in this format is "11111111.1111". If decimal places are not needed this field shall still contain a ".0000" in columns 39-43. [Usage note: Many systems support a different format for this value that does not include as many decimal places. It is recommended that users determine their requirements for significant digits based on the lowest common denominator of the software systems being used for a given project.]

6.g.(5) The QTY TO DATE is the quantity of material installed in this activity up to the data date. This number consists of eight digits, one decimal point, and four more digits. An example of a number in this format is "11111111.1111". If decimal places are not needed this field shall still contain a ".0000" in columns 53-57. [Usage note: Many systems support a different format for this value that does not include as many decimal places. It is recommended that users determine their requirements for significant digits based on the lowest common denominator of the software systems being used for a given project.]

6.g.(6) The UNIT OF MEASURE is an abbreviation that may be used to describe the units being measured for this activity. Valid values for this field are any meaningful English or metric unit, except "LS" for Lump Sum. Lump Sum activities are not to have Unit Cost Records.

6.h. Progress Record: Progress Record(s) shall follow all Unit Cost Record(s). If there are no Unit Cost Record(s), then the Progress Record(s) shall follow all Precedence Records. If the schedule utilizes the Arrow Diagram Method, then the Progress Record shall follow any Activity Records. One Progress Record is required for every activity in the Activity Record. The fields for this Record shall be provided in the following format:

15 Jun 95

<u>Description</u>	<u>Column Position</u>	<u>Max. Len.</u>	<u>Req. Value</u>	<u>Type</u>	<u>Notes</u>
RECORD IDENTIFIER	1-4	4	PROG	Fixed	Filled
ACTIVITY ID	6-5	10	√	Integer	See Comment Below
ACTUAL START DATE	17-23	7	√	ddmmmyy	Filled if Started
ACTUAL FINISH DATE	25-31	7	√	ddmmmyy	Filled if Finished
REMAINING DURATION	33-35	3	√	Integer	Right Justified
ACTIVITY COST	37-48	12	√	Format 9.2	Right Justified
COST TO DATE	50-61	12	√	Format 9.2	Right Justified
STORED MATERIAL	63-74	12	√	Format 9.2	Right Justified
EARLY START DATE	76-82	7	√	ddmmmyy	Filled if Not Started
EARLY FINISH DATE	84-90	7	√	ddmmmyy	Filled if Not Finished
LATE START DATE	92-98	7	√	ddmmmyy	Filled if Not Started
LATE FINISH DATE	100-1067		√	ddmmmyy	Filled if Not Finished
FLOAT SIGN	108-1081		+, -	Fixed	Filled if Not Finished
TOTAL FLOAT	110-1123		√	Integer	R. Just. if Not Finished

6.h.(1) The RECORD IDENTIFIER shall begin with the four characters "PROG" in the first four columns of the record.

6.h.(2) The ACTIVITY ID for each activity for which progress has been posted shall match the format described in the Activity Record.

6.h.(3) An ACTUAL START DATE is required for all in-progress activities. The ACTUAL START DATE shall be the same as, or later than, the PROJECT START date contained in the Project Record. The ACTUAL START DATE shall also be the same as, or prior to, the DATA DATE contained in the Project Record. If there is an ACTUAL START DATE for an activity that there must also be a REMAINING DURATION, and the values for the EARLY START DATE and LATE START DATE are blank. [Usage note: Some systems allow default values for ACTUAL START DATE if the date is not entered by the user. Because the failure to include a start date for activities may result in different schedule calculations, it is recommended that the ACTUAL START DATE be required for all activities in progress.]

6.h.(4) An ACTUAL FINISH DATE is required for all completed activities. If the REMAINING DURATION of an activity is zero, then there must be an ACTUAL FINISH DATE. If there is an ACTUAL FINISH DATE, then values for the EARLY START DATE, LATE START DATE, EARLY FINISH DATE, LATE FINISH DATE, FLOAT SIGN, and TOTAL FLOAT shall be blank. [Usage note: Some systems allow default values for ACTUAL FINISH DATE if the date is not entered by the user. Because the failure to include a finish date for activities may result in different schedule calculations, it is recommended that the ACTUAL FINISH DATE be required for all activities in progress.]

15 Jun 95

6.h.(5) **REMAINING DURATION** is required for all activities. Activities that have not started shall have a remaining duration equal to their original duration. Activities completed based on time, shall have a zero (0) **REMAINING DURATION**. [Usage note: Systems have a variety of "short-cut" methods to determine the **REMAINING DURATION** value. It is recommended that users actually consider the time required to complete the remaining work on a given task, rather than allow a system to calculate the remaining duration based on the amount of work that has already been accomplished.]

6.h.(6) The **ACTIVITY COST** contains the estimated earned value of the work to be accomplished in the activity. An example of a number in this format is "1111111 11.11". If decimal places are not needed this field shall still contain a ".00" in the last three columns of this field. [Usage note: Users should inquire of software vendors if the user needs to add a zero in the data field to produce the default value "0.00".]

6.h.(7) The **COST TO DATE** contains the earned value for the activity. If there is an **ACTUAL START DATE**, then there must also be some value for **COST TO DATE**. An example of a number in this format is "11111111.11". If decimal places are not needed, this field shall still contain a ".00" in the last three columns of this field. The **COST TO DATE** is not tied to **REMAINING DURATION**. For example, if the **REMAINING DURATION** is "0", the **COST TO DATE** may only be 95% of the **ACTIVITY COST**. This difference may be used to reflect 5% retainage for punch list items. [Usage note: Systems implement cost information in different ways. It is recommended that users carefully review SDEF documentation and test results to determine how to ensure that SDEF data is exported correctly.]

6.h.(8) The **STORED MATERIAL** field contains the value of the material that the Contractor has paid for and is on site or in secure storage areas that is a portion of the **COST TO DATE**. An example of a number in this format is "11111111.11". If decimal places are not needed, this field shall still contain a ".00" in the last three columns of this field. [Usage note: Systems implement the stored materials field in a variety of ways. Many systems do not enforce **STORED MATERIAL + COST TO DATE < ACTIVITY COST**. To avoid potential confusion between systems, it is recommended that new activities be added to a schedule to reflect the cost of large equipment procurement rather than use the **STORED MATERIALS** field.]

6.h.(9) The **EARLY START DATE** indicates the earliest date possible that an activity can start as calculated by a CPM scheduling system or other Contracting Officer approved planning method. If the progress record for an activity contains an **ACTUAL START DATE**, then this field shall be blank.

6.h.(10) The **EARLY FINISH DATE** indicates the earliest date possible that an activity can finish as calculated by a CPM scheduling system or other Contracting Officer approved planning method. If the progress record for an activity contains an **ACTUAL FINISH DATE**, then this field shall be blank.

6.h.(11) The **LATE START DATE** indicates the latest date that an activity can begin as calculated by a CPM scheduling system or other Contracting Officer approved planning method. If the progress record for an activity contains an **ACTUAL START DATE**, then this field shall be blank.

15 Jun 95

6.h.(12) The LATE FINISH DATE indicates the latest date that an activity can finish as calculated by a CPM scheduling system or other Contracting Officer approved planning method. If the progress record for an activity contains an ACTUAL FINISH DATE, then this field shall be blank.

6.h.(13) The FLOAT SIGN indicates whether the float time calculated using a CPM scheduling system or other Contracting Officer approved planning method, is positive or negative in nature. If the progress record for an activity contains an ACTUAL FINISH DATE, then this field shall be blank. In the case of zero float this field shall be blank.

6.h.(14) The TOTAL FLOAT indicates the total float time. In the Precedence Diagram Method (PDM), the total float is the difference between the early and late start or finish dates. In the Arrow Diagram Method (ADM), the total float is equal to the late event time at the end of the activity, minus the sum of the early event time at the start of the activity plus the duration of the activity.

6.i. Project End Record: The Project End Record shall be used to identify that the data file is completed. If the ASCII End of File character is encountered, then data import programs shall use that character to infer that the data continues on the next disk. The user shall then be prompted for the next disk number, based on the VOLM record data. The Project End Record shall be the last record of the entire data file, and shall have the following format:

<u>Description</u>	<u>Column Max.</u>		<u>Req.</u>		<u>Notes</u>
	<u>Position</u>	<u>Len.</u>	<u>Value</u>	<u>Type</u>	
RECORD IDENTIFIER	1-3	3	END	Fixed	Filled

6.i.(1) The RECORD IDENTIFIER for the Project End Record shall be "END". Data contained in the data exchange file that occurs after this record shall not be used.

SECTION TABLE OF CONTENTS

DIVISION 01 - GENERAL REQUIREMENTS

SECTION 01330

SUBMITTAL PROCEDURES

PART 1 GENERAL

- 1.1 SUBMITTAL IDENTIFICATION
- 1.2 SUBMITTAL CLASSIFICATION
 - 1.2.1 Government Approved
 - 1.2.2 Information Only
- 1.3 APPROVED SUBMITTALS
- 1.4 DISAPPROVED SUBMITTALS
- 1.5 WITHHOLDING OF PAYMENT

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION

- 3.1 GENERAL
- 3.2 SUBMITTAL REGISTER (ENG FORM 4288)
- 3.3 SCHEDULING
- 3.4 TRANSMITTAL FORM (ENG FORM 4025)
- 3.5 SUBMITTAL PROCEDURE
 - 3.5.1 Procedures
 - 3.5.2 Deviations
- 3.6 CONTROL OF SUBMITTALS
- 3.7 GOVERNMENT APPROVED SUBMITTALS
- 3.8 INFORMATION ONLY SUBMITTALS
- 3.9 STAMPS

-- End of Section Table of Contents --

SECTION 01330

SUBMITTAL PROCEDURES

PART 1 GENERAL

1.1 SUBMITTAL IDENTIFICATION

Submittals required are identified by SD numbers as follows:

SD-01 Data

SD-04 Drawings

SD-06 Instructions

SD-07 Schedules

SD-08 Statements

SD-09 Reports

SD-13 Certificates

SD-14 Samples

SD-18 Records

SD-19 Operation and Maintenance Manuals

1.2 SUBMITTAL CLASSIFICATION

Submittals are classified as follows:

1.2.1 Government Approved

Governmental approval is required for extensions of design, critical materials, deviations, equipment whose compatibility with the entire system must be checked, and other items as designated by the Contracting Officer. Within the terms of the Contract Clause entitled "Specifications and Drawings for Construction," they are considered to be "shop drawings."

1.2.2 Information Only

All submittals not requiring Government approval will be for information only. They are not considered to be "shop drawings" within the terms of the Contract Clause referred to above.

1.3 APPROVED SUBMITTALS

The Contracting Officer's approval of submittals shall not be construed as a complete check, but will indicate only that the general method of construction, materials, detailing and other information are satisfactory. Approval will not relieve the Contractor of the responsibility for any error which may exist, as the Contractor under the CQC requirements of this

contract is responsible for dimensions, the design of adequate connections and details, and the satisfactory construction of all work. After submittals have been approved by the Contracting Officer, no resubmittal for the purpose of substituting materials or equipment will be considered unless accompanied by an explanation of why a substitution is necessary.

1.4 DISAPPROVED SUBMITTALS

The Contractor shall make all corrections required by the Contracting Officer and promptly furnish a corrected submittal in the form and number of copies specified for the initial submittal. If the Contractor considers any correction indicated on the submittals to constitute a change to the contract, a notice in accordance with the Contract Clause "Changes" shall be given promptly to the Contracting Officer.

1.5 WITHHOLDING OF PAYMENT

Payment for materials incorporated in the work will not be made if required approvals have not been obtained.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION

3.1 GENERAL

The Contractor shall make submittals as required by the specifications. The Contracting Officer may request submittals in addition to those specified when deemed necessary to adequately describe the work covered in the respective sections. Units of weights and measures used on all submittals shall be the same as those used in the contract drawings. Each submittal shall be complete and in sufficient detail to allow ready determination of compliance with contract requirements. Prior to submittal, all items shall be checked and approved by the Contractor's Quality Control (CQC) representative and each item shall be stamped, signed, and dated by the CQC representative indicating action taken. Proposed deviations from the contract requirements shall be clearly identified. Submittals shall include items such as: Contractor's, manufacturer's, or fabricator's drawings; descriptive literature including (but not limited to) catalog cuts, diagrams, operating charts or curves; test reports; test cylinders; samples; O&M manuals (including parts list); certifications; warranties; and other such required submittals. Submittals requiring Government approval shall be scheduled and made prior to the acquisition of the material or equipment covered thereby. Samples remaining upon completion of the work shall be picked up and disposed of in accordance with manufacturer's Material Safety Data Sheets (MSDS) and in compliance with existing laws and regulations.

3.2 SUBMITTAL REGISTER (ENG FORM 4288)

At the end of this section is one set of ENG Form 4288 listing items of equipment and materials for which submittals are required by the specifications; this list may not be all inclusive and additional submittals may be required. The Contractor will also be given the submittal register as a diskette containing the computerized ENG Form 4288 and instructions on the use of the diskette. Columns "d" through "r" have been completed by the Government; the Contractor shall complete columns "a" and "s" through "u" and submit the forms (hard copy plus associated electronic file) to the Contracting Officer for approval within 30 calendar

days after Notice to Proceed. The Contractor shall keep this diskette up-to-date and shall submit it to the Government together with the monthly payment request. The approved submittal register will become the scheduling document and will be used to control submittals throughout the life of the contract. The submittal register and the progress schedules shall be coordinated.

3.3 SCHEDULING

Submittals covering component items forming a system or items that are interrelated shall be scheduled to be coordinated and submitted concurrently. Certifications to be submitted with the pertinent drawings shall be so scheduled. Adequate time (a minimum of 30 calendar days exclusive of mailing time) shall be allowed and shown on the register for review and approval. No delay damages or time extensions will be allowed for time lost in late submittals. An additional 15 calendar days shall be allowed and shown on the register for review and approval of submittals for food service equipment and refrigeration and HVAC control systems.

3.4 TRANSMITTAL FORM (ENG FORM 4025)

The sample transmittal form (ENG Form 4025) attached to this section shall be used for submitting both Government approved and information only submittals in accordance with the instructions on the reverse side of the form. These forms will be furnished to the Contractor. This form shall be properly completed by filling out all the heading blank spaces and identifying each item submitted. Special care shall be exercised to ensure proper listing of the specification paragraph and/or sheet number of the contract drawings pertinent to the data submitted for each item.

3.5 SUBMITTAL PROCEDURE

Submittals shall be made as follows:

3.5.1 Procedures

Submittals to the Contracting Officer are required in the number of copies identified in paragraphs 3.7 and 3.8 and shall be submitted to:

U.S. Army Corps of Engineer District, Honolulu
Schofield Barracks Resident Office
Bldg 230
Fort Shafter, Hawaii 96858-5440

3.5.2 Deviations

For submittals which include proposed deviations requested by the Contractor, the column "variation" of ENG Form 4025 shall be checked. The Contractor shall set forth in writing the reason for any deviations and annotate such deviations on the submittal. The Government reserves the right to rescind inadvertent approval of submittals containing unnoted deviations.

3.6 CONTROL OF SUBMITTALS

The Contractor shall carefully control his procurement operations to ensure that each individual submittal is made on or before the Contractor scheduled submittal date shown on the approved "Submittal Register."

3.7 GOVERNMENT APPROVED SUBMITTALS

Upon completion of review of submittals requiring Government approval, the submittals will be identified as having received approval by being so stamped and dated. 3 copies of the submittal will be retained by the Contracting Officer and 1 copy of the submittal will be returned to the Contractor.

3.8 INFORMATION ONLY SUBMITTALS

Submittals provided For Information Only (FIO) to the Government shall be submitted in three (3) copies, including resubmittals. Normally submittals for information only will not be returned. Approval of the Contracting Officer is not required on information only submittals. The Government reserves the right to require the Contractor to resubmit any item found not to comply with the contract. This does not relieve the Contractor from the obligation to furnish material conforming to the plans and specifications; will not prevent the Contracting Officer from requiring removal and replacement of nonconforming material incorporated in the work; and does not relieve the Contractor of the requirement to furnish samples for testing by the Government laboratory or for check testing by the Government in those instances where the technical specifications so prescribe.

3.9 STAMPS

Stamps used by the Contractor on the submittal data to certify that the submittal meets contract requirements shall be similar to the following:

CONTRACTOR (Firm Name)
_____ Approved
_____ Approved with corrections as noted on submittal data and/or attached sheets(s).
SIGNATURE: _____
TITLE: _____
DATE: _____

-- End of Section --

(ER 415 1-10)

SPECIFICATION SECTION

ERNMENT

CONTRACTOR

SPECIFICATION SECTION

[illegible]

(ER 415 1-10)

SPECIFICATION SECTION

01430

CONTRACTOR

EXTERIOR PAINTING, VARIOUS FAMILY HSG AREAS, OAHU, HI

[illegible]

(ER 415 1-10)

SPECIFICATION SECTION

01900

CONTRACTOR

--	--

GOVERNMENT

[illegible]

(ER 415 1-10)

SPECIFICATION SECTION

02220

CONTRACTOR

1

GOVERNMENT

[illegible]

(ER 415 1-10)

SPECIFICATION SECTION

04200

CONTRACTOR

SPECIFICATION SECTION

[illegible]

CONTRACT NO.
FHMA PKG H-36

CONTRACTOR

SPECIFICATION SECTION

06100

[illegible]

(ER 415 1-10)

SPECIFICATION SECTION

ERNMENT

CONTRACTOR

SPECIFICATION SECTION

[illegible]

(ER 415 1-10)

SPECIFICATION SECTION

ERNMENT	
---------	--

CONTRACTOR

GOVERNMENT

[illegible]

(ER 415 1-10)

FHMA PKG H-36

09900

CONTRACTOR

EXTERIOR PAINTING, VARIOUS FAMILY HSG AREAS, OAHU, HI

CONTRACT NO.
FHMA PKG H-36

CONTRACTOR

SPECIFICATION SECTION

13283

ENG FORM 4288, Jul 96

INSTRUCTIONS

1. Section I will be initiated by the Contractor in the required number of copies.
2. Each transmittal shall be numbered consecutively in the space provided for "Transmittal No.". This number, in addition to the contract number, will form a serial number for identifying each submittal. For new submittals or resubmittals mark the appropriate box; on resubmittals, insert transmittal number of last submission as well as the new submittal number.
3. The "Item No." will be the same "Item No." as indicated on ENG FORM 4288-R for each entry on this form.
4. Submittals requiring expeditious handling will be submitted on a separate form.
5. Separate transmittal form will be used for submittals under separate sections of the specifications.
6. A check shall be placed in the "Variation" column when a submittal is not in accordance with the plans and specifications--also, a written statement to that effect shall be included in the space provided for "Remarks".
7. Form is self-transmittal, letter of transmittal is not required.
8. When a sample of material or Manufacturer's Certificate of Compliance is transmitted, indicate "Sample" or "Certificate" in column c, Section I.
9. U.S. Army Corps of Engineers approving authority will assign action codes as indicated below in space provided in Section I, column i to each item submitted. In addition they will ensure enclosures are indicated and attached to the form prior to return to the contractor. The Contractor will assign action codes as indicated below in Section I, column g, to each item submitted.

THE FOLLOWING ACTION CODES ARE GIVEN TO ITEMS SUBMITTED

A	--	Approved as submitted.	E	--	Disapproved (See attached).
B	--	Approved, except as noted on drawings.	F	--	Receipt acknowledged.
C	--	Approved, except as noted on drawings. Refer to attached sheet resubmission required.	FX	--	Receipt acknowledged, does not comply as noted with contract requirements.
D	--	Will be returned by separate correspondence.	G	--	Other (Specify)

10. Approval of items does not relieve the contractor from complying with all the requirements of the contract plans and specifications.

(Reverse of ENG Form 4025-R)

SECTION TABLE OF CONTENTS

DIVISION 01 - GENERAL REQUIREMENTS

SECTION 01430

ENVIRONMENTAL PROTECTION

PART 1 GENERAL

- 1.1 REFERENCES
- 1.2 GENERAL REQUIREMENTS
 - 1.2.1 Subcontractors
 - 1.2.2 Notification
- 1.3 SUBMITTALS

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION

- 3.1 PROTECTION OF ENVIRONMENTAL RESOURCES
 - 3.1.1 Land Resources
 - 3.1.1.1 Work Area Limits
 - 3.1.1.2 Protection of Landscape
 - 3.1.1.3 Contractor Facilities and Work Areas
 - 3.1.2 Disposal of Wastes
 - 3.1.2.1 Solid Wastes
 - 3.1.2.2 Chemical Wastes
 - 3.1.2.3 Hazardous Wastes
 - 3.1.3 Water Resources
 - 3.1.3.1 Monitoring of Water Areas
 - 3.1.4 Wildlife Resources
 - 3.1.5 Air Resources
 - 3.1.5.1 Particulates
 - 3.1.5.2 Hydrocarbons and Carbon Monoxide
 - 3.1.5.3 Odors
 - 3.1.5.4 Monitoring of Air Quality
 - 3.1.6 Sound Intrusions
- 3.2 POST CONSTRUCTION CLEANUP
- 3.3 RESTORATION OF LANDSCAPE DAMAGE
- 3.4 MAINTENANCE OF POLLUTION CONTROL FACILITIES
- 3.5 TRAINING OF CONTRACTOR PERSONNEL IN POLLUTION CONTROL

-- End of Section Table of Contents --

SECTION 01430

ENVIRONMENTAL PROTECTION

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

STATE OF HAWAII DEPARTMENT OF HEALTH (HIDOH)

HIDOH, Chapter 46	Administrative Rules, Title 11, Community Noise Control
HIDOH, Chapter 59	Administrative Rules, Ambient Air Quality Standards
HIDOH, Chapter 60	Administrative Rules, Air Pollution Control

1.2 GENERAL REQUIREMENTS

This section covers prevention of environmental pollution and damage as the result of construction operations under this contract and for those measures set forth in the TECHNICAL REQUIREMENTS. For the purpose of this specification, environmental pollution and damage is defined as the presence of chemical, physical, or biological elements or agents which adversely affect human health or welfare; unfavorably alter ecological balances of importance to human life; affect other species of importance to man; or degrade the utility of the environment for aesthetic, cultural and/or historical purposes. The control of environmental pollution and damage requires consideration of air, water, and land, and includes management of visual aesthetics, noise, solid waste, radiant energy and radioactive materials, as well as other pollutants.

1.2.1 Subcontractors

Assurance of compliance with this section by subcontractors will be the responsibility of the Contractor.

1.2.2 Notification

The Contracting Officer will notify the Contractor in writing of any observed noncompliance with the aforementioned Federal, State or local laws or regulations, permits, and other elements of the Contractor's environmental protection plan. The Contractor shall, after receipt of such notice, inform the Contracting Officer of proposed corrective action and take such action as may be approved. If the Contractor fails to comply promptly, the Contracting Officer may issue an order stopping all or part of the work until satisfactory corrective action has been taken. No time extensions will be granted or costs or damages allowed to the Contractor for any such suspension.

1.3 SUBMITTALS

Government approval is required for submittals with "GA" designation; submittals having an "FIO" designation are for information only. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-18 Records

Environmental Protection Plan; GA.

Within 30 calendar days of receipt of Notice to Proceed, the Contractor shall submit in writing an environmental protection plan. Approval of the Contractor's plan will not relieve the Contractor of his responsibility for adequate and continuing control of pollutants and other environmental protection measures. The environmental protection plan shall include but not be limited to the following:

- a. A list of Federal, State, and local laws, regulations, and permits concerning environmental protection, pollution control and abatement that are applicable to the Contractor's proposed operations and the requirements imposed by those laws, regulations, and permits.
- b. Methods for protection of features to be preserved within authorized work areas. The Contractor shall prepare a listing of methods to protect resources needing protection; i.e., trees, shrubs, vines, grasses and ground cover, landscape features, air and water quality, wildlife, soil, historical, archeological, and cultural resources.
- c. Procedures to be implemented to provide the required environmental protection and to comply with the applicable laws and regulations. The Contractor shall set out the procedures to be followed to correct pollution of the environment due to accident, natural causes, or failure to follow the procedures set out in accordance with the environmental protection plan.
- d. Location of the solid waste disposal area.
- e. Drawings showing locations of any proposed temporary material storage areas, structures, sanitary facilities, and stockpiles of excess or spoil materials.
- f. Environmental monitoring plans for the job site, including land, water, air, and noise monitoring.
- g. Traffic control plan.
- h. Methods of protecting surface and ground water during construction activities.
- i. Work area plan showing the proposed activity in each portion of the area and identifying the areas of limited use or nonuse. Plan should include measures for marking the limits of use areas.
- j. Training for his personnel during the construction period.

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION

3.1 PROTECTION OF ENVIRONMENTAL RESOURCES

The environmental resources within the project boundaries and those affected outside the limits of permanent work under this contract shall be protected during the entire period of this contract. The Contractor shall confine his activities to areas defined by the drawings and specifications.

3.1.1 Land Resources

Prior to the beginning of any construction, the Contractor shall identify all land resources to be preserved within the Contractor's work area. Except in areas indicated on the drawings or specified to be cleared, the Contractor shall not remove, cut, deface, injure, or destroy land resources including trees, shrubs, vines, grasses, topsoil, and land forms without special permission from the Contracting Officer. No ropes, cables, or guys shall be fastened to or attached to any trees for anchorage unless specifically authorized. Where such special emergency use is permitted, the Contractor shall provide effective protection for land and vegetation resources at all times as defined in the following subparagraphs.

3.1.1.1 Work Area Limits

Prior to any construction, the Contractor shall mark the areas that are not required to accomplish all work to be performed under this contract. Isolated areas within the general work area which are to be saved and protected shall also be marked or fenced. Monuments and markers shall be protected before construction operations commence. Where construction operations are to be conducted during darkness, the markers shall be visible. The Contractor shall convey to his personnel the purpose of marking and/or protection of all necessary objects.

3.1.1.2 Protection of Landscape

Trees, shrubs, vines, grasses, land forms and other landscape features indicated and defined on the drawings to be preserved shall be clearly identified by marking, fencing, or wrapping with boards, or any other approved techniques.

3.1.1.3 Contractor Facilities and Work Areas

Location of Field Offices, Storage, and Other Contractor Facilities: The Contractors' field offices, staging areas, stockpile storage, and temporary buildings shall be placed in areas designated on the drawings or as directed by the Contracting Officer. Temporary movement or relocation of Contractor facilities shall be made only on approval by the Contracting Officer.

3.1.2 Disposal of Wastes

Disposal of wastes shall be as specified in Section 02220 DEMOLITION and as specified hereinafter.

3.1.2.1 Solid Wastes

Solid wastes shall be placed in containers which are emptied on a regular schedule. All handling and disposal shall be conducted to prevent contamination. Segregation measures shall be employed such that no hazardous or toxic waste will become commingled with solid waste. The Contractor shall transport all solid waste off Government property and dispose of it in compliance with Federal, State, and local requirements for solid waste disposal. The Contractor shall comply with Federal, State, and local laws and regulations pertaining to the use of landfill areas.

3.1.2.2 Chemical Wastes

Chemical wastes shall be stored in corrosion resistant containers, removed from the work area and disposed of in accordance with Federal, State, and local laws and regulations.

3.1.2.3 Hazardous Wastes

The Contractor shall take sufficient measures to prevent spillage of hazardous and toxic materials during dispensing and shall collect waste in suitable containers observing compatibility. The Contractor shall transport all hazardous waste off Government property and dispose of it in compliance with Federal and local laws and regulations. Spills of hazardous or toxic materials shall be immediately reported to the Contracting Officer. Cleanup and cleanup costs due to spills shall be the responsibility of the Contractor.

3.1.3 Water Resources

The Contractor shall keep construction activities under surveillance, management, and control to avoid pollution of surface and ground waters. Special management techniques as set out below shall be implemented to control water pollution by the listed construction activities which are included in this contract. In particular, toxic or hazardous chemicals shall not be applied to soil or vegetation in a manner that may cause contamination of the fresh water reserve.

3.1.3.1 Monitoring of Water Areas

Monitoring of water areas affected by construction activities shall be the responsibility of the Contractor. All water areas affected by construction activities shall be monitored by the Contractor.

3.1.4 Wildlife Resources

The Contractor shall keep construction activities under surveillance, management and control to minimize interference with, disturbance to and damage of wildlife. Species that require specific attention along with measures for their protection will be listed by the Contractor prior to beginning of construction operations.

3.1.5 Air Resources

The Contractor shall keep construction activities under surveillance, management and control to minimize pollution of air resources. All activities, equipment, processes, and work operated or performed by the Contractor in accomplishing the specified construction shall be in strict accordance with HIDOH, Chapter 59, HIDOH, Chapter 60, and all Federal emission and performance laws and standards. Ambient Air Quality Standards set by the Environmental Protection Agency shall be maintained for those

construction operations and activities specified in this section. Special management techniques as set out below shall be implemented to control air pollution by the construction activities which are included in the contract.

3.1.5.1 Particulates

- a. Dust particles, aerosols, and gaseous by-products from all construction activities, processing and preparation of materials, such as from asphaltic batch plants, shall be controlled at all times, including weekends, holidays and hours when work is not in progress.
- b. The Contractor shall maintain all stockpiles, haul roads, permanent and temporary access roads, and all other work areas within or outside the project boundaries free from particulates which would cause the air pollution standards mentioned in paragraph Air Resources, herein before, to be exceeded or which would cause a hazard or a nuisance. Sprinkling, chemical treatment of an approved type, light bituminous treatment, baghouse, scrubbers, electrostatic precipitators or other methods will be permitted to control particulates in the work area. Sprinkling, to be efficient, must be repeated at such intervals as to keep the disturbed area damp at all times. The Contractor must have sufficient competent equipment available to accomplish this task. Particulate control shall be performed as the work proceeds and whenever a particulate nuisance or hazard occurs.

3.1.5.2 Hydrocarbons and Carbon Monoxide

Hydrocarbons and carbon monoxide emissions from equipment shall be controlled to Federal and State allowable limits at all times.

3.1.5.3 Odors

Odors shall be controlled at all times for all construction activities, processing and preparation of materials.

3.1.5.4 Monitoring of Air Quality

Monitoring of air quality shall be the responsibility of the Contractor. All air areas affected by the construction activities shall be monitored by the Contractor.

3.1.6 Sound Intrusions

The Contractor shall keep construction activities under surveillance, and control to minimize damage to the environment by noise. The Contractor shall comply with the provisions of HDOH, Chapter 46.

3.2 POST CONSTRUCTION CLEANUP

The Contractor shall clean up area(s) used for construction.

3.3 RESTORATION OF LANDSCAPE DAMAGE

The Contractor shall restore all landscape features damaged or destroyed during construction operations outside the limits of the approved work areas. Such restoration shall be in accordance with the plan submitted for

approval by the Contracting Officer. This work will be accomplished at the Contractor's expense.

3.4 MAINTENANCE OF POLLUTION CONTROL FACILITIES

The Contractor shall maintain all constructed facilities and portable pollution control devices for the duration of the contract or for that length of time construction activities create the particular pollutant.

3.5 TRAINING OF CONTRACTOR PERSONNEL IN POLLUTION CONTROL

The Contractor shall train his personnel in all phases of environmental protection. The training shall include methods of detecting and avoiding pollution, familiarization with pollution standards, both statutory and contractual, and installation and care of facilities (vegetative covers, and instruments required for monitoring purposes) to ensure adequate and continuous environmental pollution control.

-- End of Section --

SECTION TABLE OF CONTENTS

DIVISION 01 - GENERAL REQUIREMENTS

SECTION 01451

CONTRACTOR QUALITY CONTROL

PART 1 GENERAL

- 1.1 REFERENCES
- 1.2 PAYMENT

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION

- 3.1 GENERAL
- 3.2 QUALITY CONTROL PLAN
 - 3.2.1 General
 - 3.2.2 Content of the CQC Plan
 - 3.2.3 Acceptance of Plan
 - 3.2.4 Notification of Changes
- 3.3 COORDINATION MEETING
- 3.4 QUALITY CONTROL ORGANIZATION
 - 3.4.1 General
 - 3.4.2 CQC System Manager
 - 3.4.3 CQC Personnel
 - 3.4.4 Additional Requirement
 - 3.4.5 Organizational Changes
- 3.5 SUBMITTALS
- 3.6 CONTROL
 - 3.6.1 Preparatory Phase
 - 3.6.2 Initial Phase
 - 3.6.3 Follow-up Phase
 - 3.6.4 Additional Preparatory and Initial Phases
- 3.7 TESTS
 - 3.7.1 Testing Procedure
 - 3.7.2 Testing Laboratories
 - 3.7.2.1 Laboratory Accreditation
 - 3.7.2.2 Capability Check
 - 3.7.2.3 Capability Recheck
 - 3.7.3 Onsite Laboratory
 - 3.7.4 Furnishing or Transportation of Samples for Testing
- 3.8 COMPLETION INSPECTION
 - 3.8.1 Punch-Out Inspection
 - 3.8.2 Pre-Final Inspection
 - 3.8.3 Final Acceptance Inspection
- 3.9 DOCUMENTATION
- 3.10 NOTIFICATION OF NONCOMPLIANCE

-- End of Section Table of Contents --

SECTION 01451

CONTRACTOR QUALITY CONTROL

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM D 3740	(1996) Minimum Requirements for Agencies Engaged in the Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction
ASTM E 329	(1995b) Agencies Engaged in the Testing and/or Inspection of Materials Used in Construction

1.2 PAYMENT

Separate payment will not be made for providing and maintaining an effective Quality Control program, and all costs associated therewith shall be included in the applicable unit prices or lump-sum prices contained in the Bidding Schedule.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION

3.1 GENERAL

The Contractor is responsible for quality control and shall establish and maintain an effective quality control system in compliance with the Contract Clause titled "Inspection of Construction." The quality control system shall consist of plans, procedures, and organization necessary to produce an end product which complies with the contract requirements. The system shall cover all construction operations, both onsite and offsite, and shall be keyed to the proposed construction sequence. The project superintendent will be held responsible for the quality of work on the job and is subject to removal by the Contracting Officer for non-compliance with quality requirements specified in the contract. The project superintendent in this context shall mean the individual with the responsibility for the overall management of the project including quality and production.

3.2 QUALITY CONTROL PLAN

3.2.1 General

The Contractor shall furnish for review by the Government, not later than

30 days after receipt of notice to proceed, the Contractor Quality Control (CQC) Plan proposed to implement the requirements of the Contract Clause titled "Inspection of Construction." The plan shall identify personnel, procedures, control, instructions, test, records, and forms to be used. The Government will consider an interim plan for the first 90 days of operation. Construction will be permitted to begin only after acceptance of the CQC Plan or acceptance of an interim plan applicable to the particular feature of work to be started. Work outside of the features of work included in an accepted interim plan will not be permitted to begin until acceptance of a CQC Plan or another interim plan containing the additional features of work to be started.

3.2.2 Content of the CQC Plan

The CQC Plan shall include, as a minimum, the following to cover all construction operations, both onsite and offsite, including work by subcontractors, fabricators, suppliers, and purchasing agents:

- a. A description of the quality control organization, including a chart showing lines of authority and acknowledgment that the CQC staff shall implement the three phase control system for all aspects of the work specified. The staff shall include a CQC System Manager who shall report to the project superintendent.
- b. The name, qualifications (in resume format), duties, responsibilities, and authorities of each person assigned a CQC function. Technicians responsible for sampling and testing of concrete shall be certified by the American Concrete Institute (ACI) or the Concrete Technicians Association of Hawaii (CTAH). Proof of certification shall be included in the CQC Plan. Personnel qualifications may be furnished incrementally as the work progresses, but in no case, less than fourteen (14) calendar days before personnel are required on the job.
- c. A copy of the letter to the CQC System Manager signed by an authorized official of the firm which describes the responsibilities and delegates sufficient authorities to adequately perform the functions of the CQC System Manager, including authority to stop work which is not in compliance with the contract. The CQC System Manager shall issue letters of direction to all other various quality control representatives outlining duties, authorities, and responsibilities. Copies of these letters shall also be furnished to the Government.
- d. Procedures for scheduling, reviewing, certifying, and managing submittals, including those of subcontractors, offsite fabricators, suppliers, and purchasing agents. These procedures shall be in accordance with Section 01330 SUBMITTAL PROCEDURES.
- e. Control, verification, and acceptance testing procedures for each specific test to include the test name, specification paragraph requiring test, feature of work to be tested, test frequency, and person responsible for each test.
- f. Procedures for tracking preparatory, initial, and follow-up control phases and control, verification, and acceptance tests including documentation.
- g. Procedures for tracking construction deficiencies from

identification through acceptable corrective action. These procedures shall establish verification that identified deficiencies have been corrected.

- h. Reporting procedures, including proposed reporting formats.
- i. A list of the definable features of work. A definable feature of work is a task which is separate and distinct from other tasks, has separate control requirements, and may be identified by different trades or disciplines, or it may be work by the same trade in a different environment. Although each section of the specifications may generally be considered as a definable feature of work, there are frequently more than one definable features under a particular section. This list will be agreed upon during the coordination meeting.

3.2.3 Acceptance of Plan

Acceptance of the Contractor's plan is required prior to the start of construction. Acceptance is conditional and will be predicated on satisfactory performance during the construction. The Government reserves the right to require the Contractor to make changes in his CQC Plan and operations including removal of personnel, as necessary, to obtain the quality specified.

3.2.4 Notification of Changes

After acceptance of the CQC Plan, the Contractor shall notify the Contracting Officer in writing of any proposed change. Proposed changes are subject to acceptance by the Contracting Officer.

3.3 COORDINATION MEETING

After the Preconstruction Conference, before start of construction, and prior to acceptance by the Government of the CQC Plan, the Contractor shall meet with the Contracting Officer or Authorized Representative and discuss the Contractor's quality control system. The CQC Plan shall be submitted for review a minimum of 7 calendar days prior to the Coordination Meeting. During the meeting, a mutual understanding of the system details shall be developed, including the forms for recording the CQC operations, control activities, testing, administration of the system for both onsite and offsite work, and the interrelationship of Contractor's Management and control with the Government's Quality Assurance. Minutes of the meeting shall be prepared by the Government and signed by both the Contractor and the Contracting Officer. The minutes shall become a part of the contract file. There may be occasions when subsequent conferences will be called by either party to reconfirm mutual understandings and/or address deficiencies in the CQC system or procedures which may require corrective action by the Contractor.

3.4 QUALITY CONTROL ORGANIZATION

3.4.1 General

The requirements for the CQC organization are a CQC System Manager and sufficient number of additional qualified personnel to ensure contract compliance. The Contractor shall provide a CQC organization which shall be at the site at all times during progress of the work and with complete authority to take any action necessary to ensure compliance with the

contract. All CQC staff members shall be subject to acceptance by the Contracting Officer.

3.4.2 CQC System Manager

The Contractor shall identify as CQC System Manager an individual within the onsite work organization who shall be responsible for overall management of CQC and have the authority to act in all CQC matters for the Contractor. The CQC System Manager shall be a construction person with a minimum of 5 years in related work. This CQC System Manager shall be on the site at all times during construction and shall be employed by the prime Contractor. The CQC System Manager shall be assigned as System Manager, but may have duties as project superintendent in addition to quality control. An alternate for the CQC System Manager shall be identified in the plan to serve in the event of the System Manager's absence. The requirement for the alternate shall be the same as for the designated CQC Systems Manager.

3.4.3 CQC Personnel

In addition to CQC personnel specified elsewhere in the contract, the Contractor shall provide as part of the CQC organization specialized personnel to assist the CQC System Manager. If it is subsequently determined by the Contracting Officer that the minimum contract CQC requirements are not being met, the Contractor may be required to provide additional staff personnel to the CQC organization at no cost to the Government.

3.4.4 Additional Requirement

The CQC System Manager shall have completed the course entitled "Construction Quality Management For Contractors". This course is periodically offered at the General Contractors Association of Hawaii.

3.4.5 Organizational Changes

The Contractor shall maintain the CQC staff at full strength at all times. When it is necessary to make changes to the CQC staff, the Contractor shall revise the CQC Plan to reflect the changes and submit the changes to the Contracting Officer for acceptance.

3.5 SUBMITTALS

Submittals shall be made as specified in Section 01330 SUBMITTAL PROCEDURES. The CQC organization shall be responsible for certifying that all submittals are in compliance with the contract requirements.

3.6 CONTROL

Contractor Quality Control is the means by which the Contractor ensures that the construction, to include that of subcontractors and suppliers, complies with the requirements of the contract. At least three phases of control shall be conducted by the CQC System Manager for each definable feature of work as follows:

3.6.1 Preparatory Phase

This phase shall be performed prior to beginning work on each definable feature of work, after all required plans/documents/materials are

approved/accepted, and after copies are at the work site. This phase shall include:

- a. A review of each paragraph of applicable specifications.
- b. A review of the contract drawings.
- c. A check to assure that all materials and/or equipment have been tested, submitted, and approved.
- d. Review of provisions that have been made to provide required control inspection and testing.
- e. Examination of the work area to assure that all required preliminary work has been completed and is in compliance with the contract.
- f. A physical examination of required materials, equipment, and sample work to assure that they are on hand, conform to approved shop drawings or submitted data, and are properly stored.
- g. A review of the appropriate activity hazard analysis to assure safety requirements are met.
- h. Discussion of procedures for controlling quality of the work including repetitive deficiencies. Document construction tolerances and workmanship standards for that feature of work.
- i. A check to ensure that the portion of the plan for the work to be performed has been accepted by the Contracting Officer.
- j. Discussion of the initial control phase.
- k. The Government shall be notified at least 48 hours in advance of beginning the preparatory control phase. This phase shall include a meeting conducted by the CQC System Manager and attended by the superintendent, other CQC personnel (as applicable), and the foreman responsible for the definable feature. The results of the preparatory phase actions shall be documented by separate minutes prepared by the CQC System Manager and attached to the daily CQC report. The Contractor shall instruct applicable workers as to the acceptable level of workmanship required in order to meet contract specifications.

3.6.2 Initial Phase

This phase shall be accomplished at the beginning of a definable feature of work. The following shall be accomplished:

- a. A check of work to ensure that it is in full compliance with contract requirements. Review minutes of the preparatory meeting.
- b. Verify adequacy of controls to ensure full contract compliance. Verify required control inspection and testing.
- c. Establish level of workmanship and verify that it meets minimum acceptable workmanship standards. Compare with required sample panels as appropriate.

- d. Resolve all differences.
- e. Check safety to include compliance with and upgrading of the safety plan and activity hazard analysis. Review the activity analysis with each worker.
- f. The Government shall be notified at least 24 hours in advance of beginning the initial phase. Separate minutes of this phase shall be prepared by the CQC System Manager and attached to the daily CQC report. Exact location of initial phase shall be indicated for future reference and comparison with follow-up phases.
- g. The initial phase should be repeated for each new crew to work onsite, or any time acceptable specified quality standards are not being met.

3.6.3 Follow-up Phase

Daily checks shall be performed to assure control activities, including control testing, are providing continued compliance with contract requirements, until completion of the particular feature of work. The checks shall be made a matter of record in the CQC documentation. Final follow-up checks shall be conducted and all deficiencies corrected prior to the start of additional features of work which may be affected by the deficient work. The Contractor shall not build upon nor conceal non-conforming work.

3.6.4 Additional Preparatory and Initial Phases

Additional preparatory and initial phases shall be conducted on the same definable features of work if the quality of on-going work is unacceptable, if there are changes in the applicable CQC staff, onsite production supervision or work crew, if work on a definable feature is resumed after a substantial period of inactivity, or if other problems develop.

3.7 TESTS

3.7.1 Testing Procedure

The Contractor shall perform specified or required tests to verify that control measures are adequate to provide a product which conforms to contract requirements. Upon request, the Contractor shall furnish to the Government duplicate samples of test specimens for possible testing by the Government. Testing includes operation and/or acceptance tests when specified. The Contractor shall obtain the services of an industry recognized testing laboratory, or may establish a testing laboratory at the project site acceptable to the Contracting Officer. However, tests contractually required to be performed by an industry recognized testing laboratory shall not be accomplished by the Contractor established on-site laboratory. The Contractor shall perform the following activities and record and provide the following data:

- a. Verify that testing procedures comply with contract requirements.
- b. Verify that facilities and testing equipment are available and comply with testing standards.
- c. Check test instrument calibration data against certified standards.

- d. Verify that recording forms and test identification control number system, including all of the test documentation requirements, have been prepared.
- e. Results of all tests taken, both passing and failing tests, shall be recorded on the CQC report for the date taken. Specification paragraph reference, location where tests were taken, and the sequential control number identifying the test shall be given. If approved by the Contracting Officer, actual test reports may be submitted later with a reference to the test number and date taken. An information copy of tests performed by an offsite or commercial test facility shall be provided directly to the Contracting Officer. Failure to submit timely test reports as stated may result in nonpayment for related work performed and disapproval of the test facility for this contract.

3.7.2 Testing Laboratories

3.7.2.1 Laboratory Accreditation

The testing laboratory performing the actual testing on the project shall be accredited by one of the following laboratory accreditation authorities:

American Association of State Highway and Transportation Officials
National Voluntary Laboratory Accreditation Program
American Association for Laboratory Accreditation
Washington Association of Building Officials

The testing laboratory shall submit an acknowledgement letter from one of the listed laboratory accreditation authorities indicating that the application for accreditation has been received and the accreditation process started.

3.7.2.2 Capability Check

The Government reserves the right to check laboratory equipment in the proposed laboratory for compliance with the standards set forth in the contract specifications and to check the laboratory technician's testing procedures and techniques. Laboratories utilized for testing soils, concrete, asphalt, and steel shall meet criteria detailed in ASTM D 3740 and ASTM E 329.

3.7.2.3 Capability Recheck

If the selected laboratory fails the capability check, the Contractor shall reimburse the Government for each succeeding recheck of the laboratory or the checking of a subsequently selected laboratory. Such costs will be deducted from the contract amount due the Contractor.

3.7.3 Onsite Laboratory

The Government reserves the right to utilize the Contractor's control testing laboratory and equipment to make assurance tests and to check the Contractor's testing procedures, techniques, and test results at no additional cost to the Government.

3.7.4 Furnishing or Transportation of Samples for Testing

Costs incidental to the transportation of samples or materials shall be borne by the Contractor. Samples of materials for test verification and acceptance testing by the Government shall be delivered to a testing laboratory on the Island of Oahu, State of Hawaii, designated by the Contracting Officer. Coordination for each specific test, exact delivery location, and dates will be made through the Government field office.

3.8 COMPLETION INSPECTION

3.8.1 Punch-Out Inspection

Near the completion of all work or any increment thereof established by a completion time stated in the Special Clause entitled "Commencement, Prosecution, and Completion of Work," or stated elsewhere in the specifications, the CQC System Manager shall conduct an inspection of the work and develop a punch list of items which do not conform to the approved drawings and specifications. Such a list of deficiencies shall be included in the CQC documentation, as required by paragraph DOCUMENTATION below, and shall include the estimated date by which the deficiencies will be corrected. The CQC System Manager or staff shall make a second inspection to ascertain that all deficiencies have been corrected. Once this is accomplished, the Contractor shall notify the Government that the facility is ready for the Government Pre-Final inspection.

3.8.2 Pre-Final Inspection

The Government will perform this inspection to verify that the facility is complete and ready to be occupied. The QC Manager shall develop a punch list of items which do not conform to the contract documents. The Government will review the punch list and add to or correct the items listed. The QC Manager shall incorporate Government comments and provide a Pre-Final Punch List. The Contractor's CQC System Manager shall ensure that all items on this list have been corrected before notifying the Government so that a Final inspection with the customer can be scheduled. Any items noted on the Pre-Final inspection shall be corrected in a timely manner. These inspections and any deficiency corrections required by this paragraph shall be accomplished within the time slated for completion of the entire work or any particular increment thereof if the project is divided into increments by separate completion dates.

3.8.3 Final Acceptance Inspection

The Contractor's Quality Control Inspection personnel, plus the superintendent or other primary management person, and the Contracting Officer's Representative shall be in attendance at this inspection. Additional Government personnel including, but not limited to, those from Base/Post Civil Facility Engineer user groups, and major commands may also be in attendance. The final acceptance inspection will be formally scheduled by the Contracting Officer based upon results of the Pre-Final inspection. Notice shall be given to the Contracting Officer at least 14 days prior to the final acceptance inspection and shall include the Contractor's assurance that all specific items previously identified to the Contractor as being unacceptable, along with all remaining work performed under the contract, will be complete and acceptable by the date scheduled for the final acceptance inspection. Failure of the Contractor to have all contract work acceptably complete for this inspection will be cause for the Contracting Officer to bill the Contractor for the Government's additional inspection cost in accordance with the contract clause titled "Inspection of Construction".

3.9 DOCUMENTATION

The Contractor shall maintain current records providing factual evidence that required quality control activities and/or tests have been performed. These records shall include the work of subcontractors and suppliers and shall be on an acceptable form that includes, as a minimum, the following information:

- a. Contractor/subcontractor and their area of responsibility.
- b. Operating plant/equipment with hours worked, idle, or down for repair.
- c. Work performed each day, giving location, description, and by whom. When Network Analysis (NAS) is used, identify each phase of work performed each day by NAS activity number.
- d. Test and/or control activities performed with results and references to specifications/drawings requirements. The control phase should be identified (Preparatory, Initial, Follow-up). List deficiencies noted along with corrective action.
- e. Quantity of materials received at the site with statement as to acceptability, storage, and reference to specifications/drawings requirements.
- f. Submittals reviewed, with contract reference, by whom, and action taken.
- g. Off-site surveillance activities, including actions taken.
- h. Job safety evaluations stating what was checked, results, and instructions or corrective actions.
- i. Instructions given/received and conflicts in plans and/or specifications.
- j. Contractor's verification statement.

These records shall indicate a description of trades working on the project; the number of personnel working; weather conditions encountered; and any delays encountered. These records shall cover both conforming and deficient features and shall include a statement that equipment and materials incorporated in the work and workmanship comply with the contract. The original and one copy of these records in report form shall be furnished to the Government daily within 24 hours after the date covered by the report, except that reports need not be submitted for days on which no work is performed. As a minimum, one report shall be prepared and submitted for every 7 days of no work and on the last day of a no work period. All calendar days shall be accounted for throughout the life of the contract. The first report following a day of no work shall be for that day only. Reports shall be signed and dated by the CQC System Manager. The report from the CQC System Manager shall include copies of test reports and copies of reports prepared by all subordinate quality control personnel.

3.10 NOTIFICATION OF NONCOMPLIANCE

The Contracting Officer will notify the Contractor of any detected noncompliance with the foregoing requirements. The Contractor shall take immediate corrective action after receipt of such notice. Such notice, when delivered to the Contractor at the work site, shall be deemed sufficient for the purpose of notification. If the Contractor fails or refuses to comply promptly, the Contracting Officer may issue an order stopping all or part of the work until satisfactory corrective action has been taken. No part of the time lost due to such stop orders shall be made the subject of claim for extension of time or for excess costs or damages by the Contractor.

-- End of Section --

SECTION TABLE OF CONTENTS

DIVISION 01 - GENERAL REQUIREMENTS

SECTION 01900

MISCELLANEOUS PROVISIONS

PART 1 GENERAL

- 1.1 SUBMITTALS
- 1.2 CONTRACTOR QUALITY CONTROL
- 1.3 DUST CONTROL
- 1.4 PROTECTION
 - 1.4.1 Warning Signs and Barricades
 - 1.4.2 Protection of Grassed and Landscaped Areas
 - 1.4.3 Protection of Trees and Plants
 - 1.4.4 Protection of Building From the Weather
- 1.5 RESTORATION WORK
- 1.6 REMOVAL AND DISPOSAL
- 1.7 INTERFERENCE WITH GOVERNMENT OPERATIONS
 - 1.7.1 Coordination
 - 1.7.2 Utilities and Facilities
- 1.8 CONTRACTOR'S OPERATIONS OR STORAGE AREA
- 1.9 INSPECTION
 - 1.9.1 Final Inspection and Acceptance
- 1.10 WORKING DIRECTIVES
 - 1.10.1 Working Hours
 - 1.10.2 Occupancy
 - 1.10.3 Availability of Work Areas
 - 1.10.4 Notification of Occupants

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION (NOT APPLICABLE)

-- End of Section Table of Contents --

SECTION 01900

MISCELLANEOUS PROVISIONS

PART 1 GENERAL

1.1 SUBMITTALS

Government approval is required for submittals with a "GA" designation; submittals having a "FIO" designation are for information only. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-09 Reports

Inspection of Existing Conditions; FIO.

A written report with color photographs noting the condition of the existing facilities at the time of the inspection. One copy of the report including photographs shall be submitted to the Schofield Area Family Housing Office, prior to construction.

SD-18 Records

Dust Control; GA.

Method(s) of dust control.

Condition of Contractor's Operation or Storage Area; FIO.

The Contractor shall submit to the Contracting Officer photographs and/or videos depicting the condition of the Contractor's Operation or Storage Area.

1.2 CONTRACTOR QUALITY CONTROL

To assure compliance with contract requirements, the Contractor shall establish and maintain quality control for materials and work covered by all sections of the TECHNICAL REQUIREMENTS in accordance with Section 01451 CONTRACTOR QUALITY CONTROL. Records shall be maintained for all operations including sampling and testing.

1.3 DUST CONTROL

Dust control shall be in accordance with Section 02220 DEMOLITION.

1.4 PROTECTION

The Contractor shall take all necessary precautions to insure that no damages to private or public property will result from his operations. Any such damages shall be repaired or property replaced by the Contractor in accordance with the CONTRACT CLAUSES entitled "PERMITS AND RESPONSIBILITIES" and "PROTECTION OF EXISTING VEGETATION, STRUCTURES, EQUIPMENT, UTILITIES, AND IMPROVEMENTS", without delay, and at no cost to the Government.

1.4.1 Warning Signs and Barricades

The Contractor shall be responsible for posting warning signs or erecting temporary barricades to provide for safe conduct of work and protection of property.

1.4.2 Protection of Grassed and Landscaped Areas

The Contractor's vehicles shall be restricted to paved roadways and driveways. Vehicles shall not be driven or parked on grassed and/or landscaped areas except when absolutely necessary for the performance of the work and approved in advance by the Contracting Officer. Grassed or landscaped areas damaged by the Contractor shall be restored to their original condition without delay and at no cost to the Government.

1.4.3 Protection of Trees and Plants

Where necessary, tree branches and plants interfering with the work may be temporarily tied back by the Contractor to permit accomplishment of the work in a convenient manner, so long as they will not be permanently damaged thereby. If this is not feasible, they may be pruned, subject to written approval by the Contracting Officer.

1.4.4 Protection of Building From the Weather

The interior of the building and all materials and equipment shall be protected from the weather at all times.

1.5 RESTORATION WORK

Existing conditions or areas damaged or disturbed by the Contractor's operations shall be restored to their original condition, or near original condition as possible, to the satisfaction of the Contracting Officer.

1.6 REMOVAL AND DISPOSAL

Removal and disposal shall be in accordance with Section 02220 DEMOLITION. The Contractor shall salvage or recycle waste to the maximum extent practical as it relates to the capabilities of local industries. A record of the quantity of salvaged or recycled materials shall be maintained by the Contractor during the length of the project and submitted to the Contracting Officer at acceptance of the project. Quantities shall be recorded in the unit of measure of the industry. Reuse of materials on the site shall be considered a form of recycling. An example of such reuse would be the use of acceptable excavated materials as fill.

1.7 INTERFERENCE WITH GOVERNMENT OPERATIONS

The Contractor shall establish work procedures and methods to prevent interference with existing operations within or adjacent to the construction area. Free passage into adjoining or adjacent buildings not in the contract will not be permitted except as approved by the Contracting Officer. Procedures and methods shall also provide for safe conduct of work and protection of property which is to remain undisturbed.

1.7.1 Coordination

The Contractor shall coordinate all work with the Contracting Officer to minimize interruption and inconvenience to the occupants or to the

Government. Scheduling and programming of work will be established during the pre-construction conference.

1.7.2 Utilities and Facilities

All utilities and facilities within the dwelling units shall remain operable and shall not be affected by the Contractor's work, unless otherwise approved in writing in advance by the Contracting Officer.

1.8 CONTRACTOR'S OPERATIONS OR STORAGE AREA

At the request of the Contractor, an open operations or storage area will be made available within the installation, the exact location of which will be determined by the Government. The Contractor shall be responsible for the security necessary for protection of his equipment and materials, and shall maintain the area free of debris. No rusty or unsightly materials shall be used for providing the secure measure and such measure shall be erected in a workmanlike manner. Before any construction commences on establishing the operation/storage area, Contractor shall take photographs and/or videos of the site in order to establish the original conditions of the site. A duplicate set shall be made and submitted to the Government for its files. Upon completion and prior to the final acceptance of the contract work, the Contractor shall restore the area to its original condition.

1.9 INSPECTION

1.9.1 Final Inspection and Acceptance

The Contractor shall give the Schofield Area Family Housing Office, through the Contracting Officer, a minimum of fourteen (14) calendar days advance notice prior to final inspection of each building for acceptance by the Contracting Officer. All deficiencies found on final inspection of each building shall be promptly and satisfactorily corrected by the Contractor upon notification by the Contracting Officer.

1.10 WORKING DIRECTIVES

1.10.1 Working Hours

All work shall be performed between the hours of 0730 to 1600 HST, Monday through Friday. No work shall be accomplished on Saturdays, Sundays, and all federal holidays and the period of Christmas - New Years holidays (between 20 December 2000 and 8 January 2001) without written permission from the Contracting Officer. Such written permission shall be available at the job site at all times during construction.

1.10.2 Occupancy

Buildings to be painted under this contract will be occupied during the time of construction. At times, and as directed by the Contracting Officer, the Contractor will be required to deviate from the approved schedule to accomplish work at the dwelling units that have been recently vacated, and to work out of sequence for the occupants' convenience. If a building becomes unavailable on the scheduled availability date due to exigency, the Government reserves the right to cancel the item of work, to substitute another building, or to reschedule the particular building at a later date.

1.10.3 Availability of Work Areas

- a. Initially a minimum of 4 to 6 buildings will be made available to the Contractor, but in no case prior to the Contracting Officer's approval of the Contractor's progress chart and such time as the Contracting Officer is assured that no undue work stoppage is likely to be caused by the lack of materials, equipment, or personnel.
- b. Four to 6 additional buildings will be made available to the Contractor upon satisfactory completion and acceptance of the initial buildings and its acceptance by the Contracting Officer. Thereafter, upon satisfactory completion and acceptance of the buildings, an equivalent number of buildings will be made available to the Contractor.
- c. All required construction at a particular building shall be completed within 15 consecutive work days after that building is made available to the Contractor. Once the work has started, the Contractor shall continue performance through each workday until completion, except for lunch periods and other normal breaks. The Contractor shall ensure that all required materials and equipment are on hand, including adequate work force before starting work. Work stoppage will not be permitted without the approval of the Contracting Officer.

1.10.4 Notification of Occupants

- a. The initial notification of the occupants, including their responsibilities, will be accomplished by the Schofield Area Family Housing Office.
- b. After the Schedule has been approved, the affected occupants shall be notified by the Contractor of the date and time work will begin at that building and to remove or safeguard their valuables and personal effects.
- c. The Contractor shall by letter notify each dwelling unit a minimum of seven (7) calendar days prior to commencement of work on that building. This notification shall include the time, the date, and any pertinent changes to the progress chart or any special requirements approved by the Contracting Officer. If the scheduled work is delayed for any cause, the affected occupants shall be notified immediately in writing by the Contractor, and they shall be notified again in writing by the Contractor prior to the commencement of rescheduled work. The Contractor shall include the following information in all delay and rescheduling notices:
 - (1) Title of Contract
 - (2) Originally Scheduled Date of Work
 - (3) Cause of Delay
 - (4) Rescheduled Date of Work
 - (5) Family Housing Office Point of Contact
 - (6) Family Housing Office Telephone
 - (7) Contractor's Point of Contact
 - (8) Contractor's Name and Telephone

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION (NOT APPLICABLE)

-- End of Section --

SECTION TABLE OF CONTENTS

DIVISION 02 - SITE WORK

SECTION 02220

DEMOLITION

PART 1 GENERAL

- 1.1 REFERENCES
- 1.2 GENERAL REQUIREMENTS
- 1.3 SUBMITTALS
- 1.4 DUST CONTROL
- 1.5 PROTECTION
 - 1.5.1 Protection of Personnel
 - 1.5.2 Protection of Existing Property
 - 1.5.3 Protection From the Weather
 - 1.5.4 Protection of Trees
 - 1.5.5 Environmental Protection
- 1.6 BURNING
- 1.7 USE OF EXPLOSIVES
- 1.8 SURFACES WITH LEAD-BASED PAINT (LBP)

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION

- 3.1 DISPOSITION OF MATERIAL
 - 3.1.1 Salvageable Items and Material
 - 3.1.1.1 Material Salvaged for the Contractor
 - 3.1.2 Unsalvageable Material
- 3.2 CLEAN UP

-- End of Section Table of Contents --

SECTION 02220

DEMOLITION

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

ENGINEERING MANUALS (EM)

EM 385-1-1 (1996) U.S. Army Corps of Engineers Safety and Health Requirements Manual

1.2 GENERAL REQUIREMENTS

The work includes selective demolition and removal of resulting rubbish and debris. Rubbish and debris shall be removed from Government property daily, unless otherwise directed, to avoid accumulation at the demolition site. Materials that cannot be removed daily shall be stored in areas specified by the Contracting Officer. In the interest of occupational safety and health, the work shall be performed in accordance with EM 385-1-1, Section 23, Demolition, and other applicable Sections. In the interest of conservation, salvage shall be pursued to the maximum extent possible; salvaged items and materials shall be disposed of as specified.

1.3 SUBMITTALS

Government approval is required for submittals with a "GA" designation; submittals having an "FIO" designation are for information only. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-08 Statements

Work Plan; GA.

The procedures proposed for the accomplishment of the work. The procedures shall provide for safe conduct of the work, including procedures and methods to provide necessary supports, lateral bracing and shoring when required, protection of property which is to remain undisturbed, coordination with other work in progress, and timely disconnection of utility services. The procedures shall include a detailed description of the methods and equipment to be used for each operation, and the sequence of operations in accordance with EM 385-1-1.

1.4 DUST CONTROL

The amount of dust resulting from demolition shall be controlled to prevent the spread of dust to occupied portions of the construction site and to avoid creation of a nuisance in the surrounding area. Use of water will

not be permitted when it will result in, or create, hazardous or objectionable conditions such as flooding and pollution.

1.5 PROTECTION

1.5.1 Protection of Personnel

During the selective demolition work the Contractor shall continuously evaluate the condition of the surfaces being demolished and take immediate action to protect all personnel working in and around the site and adjacent building surfaces. No area, section, or component of walls, columns, pilasters, or other element will be allowed to be left without sufficient bracing, shoring, or lateral support to prevent collapse or failure while workmen remove debris or perform other work in the immediate area.

1.5.2 Protection of Existing Property

Before beginning any selective demolition work, the Contractor shall survey the site and examine the drawings and specifications to determine the extent of the work. The Contractor shall take necessary precautions to avoid damage to existing items to remain in place, to be reused, or to remain the property of the Government; any damaged items shall be repaired or replaced as approved by the Contracting Officer. The Contractor shall coordinate the work of this section with all other work and shall construct and maintain shoring, bracing, and supports as required. The Contractor shall ensure that structural elements are not overloaded and shall be responsible for increasing structural supports or adding new supports as may be required as a result of any cutting, removal, or demolition work performed under this contract.

1.5.3 Protection From the Weather

The interior of buildings to remain; salvageable materials and equipment shall be protected from the weather at all times.

1.5.4 Protection of Trees

Trees within the project site which might be damaged during demolition, and which are indicated to be left in place, shall be protected by a 6 foot high fence. The fence shall be securely erected a minimum of 5 feet from the trunk of individual trees or follow the outer perimeter of branches or clumps of trees. Any tree designated to remain that is damaged during the work under this contract shall be replaced in kind or as approved by the Contracting Officer.

1.5.5 Environmental Protection

The work shall comply with the requirements of Section 01430 ENVIRONMENTAL PROTECTION.

1.6 BURNING

The use of burning at the project site for the disposal of refuse and debris will not be permitted.

1.7 USE OF EXPLOSIVES

Use of explosives will not be permitted.

1.8 SURFACES WITH LEAD-BASED PAINT (LBP)

Surfaces with lead-based paint shall be abated and disposed of under Section 13283 LEAD-BASED PAINT (LBP) ABATEMENT AND DISPOSAL.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION

3.1 DISPOSITION OF MATERIAL

Title to material and equipment to be demolished is vested in the Contractor upon receipt of notice to proceed. The Government will not be responsible for the condition, loss or damage to such property after notice to proceed.

3.1.1 Salvageable Items and Material

Contractor shall salvage items and material to the maximum extent possible.

3.1.1.1 Material Salvaged for the Contractor

Material salvaged for the Contractor shall be stored as approved by the Contracting Officer and shall be removed from Government property before completion of the contract. Material salvaged for the Contractor shall not be sold on the site.

3.1.2 Unsalvageable Material

Concrete, masonry, and other noncombustible material, except concrete permitted to remain in place, shall be disposed of off Government property. Combustible material shall be disposed of off Government property.

3.2 CLEAN UP

Debris shall be removed and transported in a manner that prevents spillage on streets or adjacent areas. Local regulations regarding hauling and disposal shall apply.

-- End of Section --

SECTION TABLE OF CONTENTS

DIVISION 04 - MASONRY

SECTION 04200

CONCRETE MASONRY UNITS

PART 1 GENERAL

- 1.1 REFERENCES
- 1.2 SUBMITTALS
- 1.3 DELIVERY, HANDLING AND STORAGE
 - 1.3.1 Masonry Units
 - 1.3.2 Cementitious Materials, Sand and Aggregates

PART 2 PRODUCTS

- 2.1 GENERAL REQUIREMENTS
- 2.2 CONCRETE MASONRY UNITS (CMU)
 - 2.2.1 Kinds and Shapes
- 2.3 MORTAR
- 2.4 GROUT
 - 2.4.1 Admixtures

PART 3 EXECUTION

- 3.1 ENVIRONMENTAL REQUIREMENTS
 - 3.1.1 Hot Weather Installation
- 3.2 LAYING MASONRY UNITS
 - 3.2.1 Surface Preparation
 - 3.2.2 Concrete Masonry Units
 - 3.2.3 Cutting and Fitting
 - 3.2.4 Jointing
 - 3.2.4.1 Tooled Joints
 - 3.2.5 Joint Widths
 - 3.2.5.1 Concrete Masonry Units
- 3.3 MORTAR
- 3.4 POINTING AND CLEANING

-- End of Section Table of Contents --

SECTION 04200

CONCRETE MASONRY UNITS

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM C 90	(1995) Loadbearing Concrete Masonry Units
ASTM C 91	(1995) Masonry Cement
ASTM C 270	(1995) Mortar for Unit Masonry
ASTM C 476	(1991) Grout for Masonry
ASTM C 494	(1992) Chemical Admixtures for Concrete

1.2 SUBMITTALS

Government approval is required for submittals with a "GA" designation; submittals having an "FIO" designation are for information only. The following shall be submitted in accordance with SECTION 01330 SUBMITTAL PROCEDURES:

SD-14 Samples

Concrete Masonry Units (CMU); FIO.

Samples of three stretcher units and one unit for each type of special shape. Units shall show the full range of texture.

1.3 DELIVERY, HANDLING AND STORAGE

Materials shall be delivered, handled, stored, and protected to avoid chipping, breakage, and contact with soil or contaminating material.

1.3.1 Masonry Units

Concrete masonry units shall be covered or protected from inclement weather and shall conform to the moisture content as specified in ASTM C 90 when delivered to the jobsite.

1.3.2 Cementitious Materials, Sand and Aggregates

Cementitious and other packaged materials shall be delivered in unopened containers, plainly marked and labeled with manufacturers' names and brands. Cementitious material shall be stored in dry, weathertight

enclosures or be completely covered. Cement shall be handled in a manner that will prevent the inclusion of foreign materials and damage by water or dampness. Sand and aggregates shall be stored in a manner to prevent contamination or segregation.

PART 2 PRODUCTS

2.1 GENERAL REQUIREMENTS

The source of materials which will affect the appearance of the finished work shall not be changed after the work has started except with Contracting Officer's approval.

2.2 CONCRETE MASONRY UNITS (CMU)

Hollow and solid concrete masonry units shall conform to ASTM C 90 , Type I, Normal weight. Cement shall have a low alkali content and be of one brand.

2.2.1 Kinds and Shapes

Units shall be modular in size and shall include cap block units and special shapes and sizes to complete the work as indicated. Units used in exposed masonry surfaces in any one building shall have a uniform fine to medium texture and a uniform color.

2.3 MORTAR

Mortar shall be Type S in accordance with the proportion specification of ASTM C 270 except Type S cement-lime mortar proportions shall be 1 part cement, 1/2 part lime and 4-1/2 parts aggregate; when masonry cement ASTM C 91 is used the maximum air content shall be limited to 12 percent and performance equal to cement-lime mortar shall be verified. Cement shall have a low alkali content and be of one brand. Aggregates shall be from one source.

2.4 GROUT

Grout shall conform to ASTM C 476. Cement used in grout shall have a low alkali content. Grout slump shall be between 8 and 10 inches. Grout shall be used subject to the limitations of Table III. Proportions shall not be changed and materials with different physical or chemical characteristics shall not be used in grout for the work unless additional evidence is furnished that the grout meet the specified requirements.

2.4.1 Admixtures

Accelerating admixture shall be non-corrosive, contain less than 0.2 percent chlorides, and conform to ASTM C 494, Type C.

PART 3 EXECUTION

3.1 ENVIRONMENTAL REQUIREMENTS

3.1.1 Hot Weather Installation

The following precautions shall be taken if masonry is erected when the ambient air temperature is more than 99 degrees F in the shade and the relative humidity is less than 50 percent. All masonry materials shall be

shaded from direct sunlight; mortar beds shall be spread no more than 4 feet ahead of masonry; masonry units shall be set within one minute of spreading mortar; and after erection, masonry shall be protected from direct exposure to wind and sun for 48 hours.

3.2 LAYING MASONRY UNITS

Masonry units shall be laid in bond pattern to match existing. Each unit shall be adjusted to its final position while mortar is still soft and plastic. Units that have been disturbed after the mortar has stiffened shall be removed, cleaned, and relaid with fresh mortar. Units used in exposed masonry surfaces shall be free from chipped edges or other imperfections detracting from the appearance of the finished work. Vertical joints shall be kept plumb. Units being laid and surfaces to receive units shall be free of water film. Solid units shall be laid in a nonfurrowed full bed of mortar. Units shall be shoved into place so that the vertical joints are tight. Vertical joints of the vertical face shells of concrete masonry units shall be completely filled with mortar. Mortar will be permitted to protrude up to 1/2 inch into the space or cells to be grouted. Means shall be provided to prevent mortar from dropping into the space below.

3.2.1 Surface Preparation

Surfaces upon which masonry is placed shall be cleaned of laitance, dust, dirt, oil, organic matter, or other foreign materials and shall be slightly roughened to provide a surface texture with a depth of at least 1/8 inch. Sandblasting shall be used, if necessary, to remove laitance from pores and to expose the aggregate.

3.2.2 Concrete Masonry Units

Units shall be full bedded under both face shells. Head joints shall be filled solidly with mortar for a distance in from the face of the unit not less than the thickness of the face shell.

3.2.3 Cutting and Fitting

Full units of the proper size shall be used wherever possible, in lieu of cut units. Cutting and fitting, including that required to accommodate the work of others, shall be done by masonry mechanics using power masonry saws. Concrete masonry units may be wet or dry cut. Wet cut units, before being placed in the work, shall be dried to the same surface-dry appearance as uncut units being laid in the wall. Cut edges shall be clean, true and sharp.

3.2.4 Jointing

Joints shall be tooled when the mortar is thumbprint hard. Horizontal joints shall be tooled last. Joints shall be brushed to remove all loose and excess mortar. Mortar joints shall be finished as follows:

3.2.4.1 Tooled Joints

Joints in exposed exterior masonry surfaces shall be tooled slightly concave. Joints shall be tooled with a jointer slightly larger than the joint width so that complete contact is made along the edges of the unit. Tooling shall be performed so that the mortar is compressed and the joint surface is sealed.

3.2.5 Joint Widths

Joint widths shall be as follows:

3.2.5.1 Concrete Masonry Units

Concrete masonry units shall have 3/8 inch joints, except they shall match existing.

3.3 MORTAR

Mortar shall be mixed in a mechanically operated mortar mixer for at least 3 minutes, but not more than 5 minutes. Measurement of ingredients for mortar shall be by volume. Ingredients not in containers, such as sand, shall be accurately measured by the use of measuring boxes. Water shall be mixed with the dry ingredients in sufficient amount to provide a workable mixture which will adhere to the vertical surfaces of masonry units. Mortar that has stiffened because of loss of water through evaporation shall be retempered by adding water to restore the proper consistency and workability. Mortar that has reached its initial set or that has not been used within 2-1/2 hours after mixing shall be discarded. Use mortar to patch existing damaged mortar joints prior to painting.

3.4 POINTING AND CLEANING

After mortar joints have attained their initial set, but prior to hardening, mortar and grout daubs or splashings shall be completely removed from masonry-unit surfaces that will be exposed or painted. Before completion of the work, defects in joints of masonry to be exposed or painted shall be raked out as necessary, filled with mortar, and tooled to match existing joints. Immediately after grout work is completed, scum and stains which have percolated through the masonry work shall be removed using a high pressure stream of water and a stiff bristled brush. Masonry surfaces shall not be cleaned, other than removing excess surface mortar, until mortar in joints has hardened. Masonry surfaces shall be left clean, free of mortar daubs, dirt, stain, and discoloration, including scum from cleaning operations, and with tight mortar joints throughout. Metal tools and metal brushes shall not be used for cleaning. Excess mortar shall be removed with wood paddles. Metal cleaning tools, metal brushes, abrasive powders, and acid solutions shall not be used. At the completion of cleaning operations, the surfaces shall be rinsed with clean water.

-- End of Section --

SECTION TABLE OF CONTENTS

DIVISION 06 - WOODS & PLASTICS

SECTION 06100

ROUGH CARPENTRY

PART 1 GENERAL

- 1.1 REFERENCES
- 1.2 SUBMITTALS
- 1.3 DELIVERY AND STORAGE

PART 2 PRODUCTS

- 2.1 LUMBER AND SHEATHING
 - 2.1.1 Grading and Marking
 - 2.1.1.1 Lumber Products
 - 2.1.2 Sizes
 - 2.1.3 Treatment
 - 2.1.3.1 Lumber
 - 2.1.4 Moisture Content
 - 2.1.5 Structural Wood Members for Rafter and Joist Repair
- 2.2 ACCESSORIES AND NAILS
 - 2.2.1 Nails

PART 3 EXECUTION

- 3.1 INSTALLATION OF FRAMING
 - 3.1.1 General
 - 3.1.2 Rafter and Joist Repair

-- End of Section Table of Contents --

SECTION 06100

ROUGH CARPENTRY

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

AMERICAN FOREST & PAPER ASSOCIATION (AF&PA)

AF&PA T01 (1991; Supple 1993; Addenda Apr 1997; Supple T02) National Design Specification for Wood Construction

AF&PA T11 (1988) Manual for Wood Frame Construction

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM A 153/A 153M (1998) Zinc Coating (Hot-Dip) on Iron and Steel Hardware

ASTM F 547 (1977; R 1995) Definitions of Terms Relating to Nails for Use with Wood and Wood-Base Materials

AMERICAN WOOD-PRESERVERS' ASSOCIATION (AWPA)

AWPA C2 (1995) Lumber, Timber, Bridge Ties and Mine Ties - Preservative Treatment by Pressure Processes

AWPA M4 (1996) Standard for the Care of Preservative-Treated Wood Products

AWPA P5 (1997) Standards for Waterborne Preservatives

1.2 SUBMITTALS

Government approval is required for submittals with a "GA" designation; submittals having an "FIO" designation are for information only. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-04 Drawings

Installation of Framing; FIO.

Drawings of structural members indicating materials and field erection details; including methods of fastening.

SD-13 Certificates

Grading and Marking; FIO.

Manufacturer's certificates (approved by an American Lumber Standards approved agency) attesting that lumber and material not normally grade marked meet the specified requirements. Certificate of Inspection for grade marked material by an American Lumber Standards Committee (ALSC) recognized inspection agency prior to shipment.

1.3 DELIVERY AND STORAGE

Materials shall be delivered to the site in undamaged condition, stored off ground in fully covered, well ventilated areas, and protected from extreme changes in temperature and humidity.

PART 2 PRODUCTS

2.1 LUMBER AND SHEATHING

2.1.1 Grading and Marking

2.1.1.1 Lumber Products

Solid sawn and finger-jointed lumber shall bear an authorized gradestamp or grademark recognized by ALSC, or an ALSC recognized certification stamp, mark, or hammerbrand. Surfaces that are to be exposed to view shall not bear grademarks, stamps, or any type of identifying mark. Hammer marking will be permitted on timbers when all surfaces will be exposed to view.

2.1.2 Sizes

Lumber and material sizes shall conform to requirements of the rules or standards under which produced. Unless otherwise specified, lumber shall be surfaced on four sides. Unless otherwise specified, sizes indicated are nominal sizes, and actual sizes shall be within manufacturing tolerances allowed by the standard under which the product is produced.

2.1.3 Treatment

Exposed areas of treated wood that are cut or drilled after treatment shall receive a field treatment in accordance with AWP A M4. All lumber shall be treated.

2.1.3.1 Lumber

Lumber shall be treated in accordance with AWP A C2 with waterborne preservatives listed in AWP A P5 to a retention level as follows: 0.25 pcf intended for above ground use.

2.1.4 Moisture Content

At the time lumber and other materials are delivered and when installed in the work their moisture content shall be as follows: Treated Lumber: 4 inches or less, nominal thickness, 19 percent maximum.

2.1.5 Structural Wood Members for Rafter and Joist Repair

Provide Douglas Fir Structural Grade No. 1 and better members sized to match existing for repairs as scheduled.

2.2 ACCESSORIES AND NAILS

Markings shall identify both the strength grade and the manufacturer. Accessories and nails shall conform to the following:

2.2.1 Nails

ASTM F 547, size and type best suited for purpose. In general, 8-penny or larger nails shall be used for nailing through 1 inch thick lumber and for toe nailing 2 inch thick lumber; 16-penny or larger nails shall be used for nailing through 2 inch thick lumber. Nails used with treated lumber shall be galvanized. Nailing shall be in accordance with the recommended nailing schedule contained in AF&PA T11. Where detailed nailing requirements are not specified, nail size and spacing shall be sufficient to develop an adequate strength for the connection. The connection's strength shall be verified against the nail capacity tables in AF&PA T01. Reasonable judgement backed by experience shall ensure that the designed connection will not cause the wood to split. If a load situation exceeds a reasonable limit for nails, a specialized connector shall be used. All materials shall be hot-dip galvanized in accordance with ASTM A 153/A 153M, Class D.

PART 3 EXECUTION

3.1 INSTALLATION OF FRAMING

3.1.1 General

General framing shall be in accordance with AF&PA T11. Members shall be closely fitted, accurately set to required lines and levels, and rigidly secured in place. Rafters and joists shall be set with crown edge up.

3.1.2 Rafter and Joist Repair

Repair as indicated to carry all loads currently imposed on existing member.

-- End of Section --

SECTION TABLE OF CONTENTS

DIVISION 06 - WOODS & PLASTICS

SECTION 06200

FINISH CARPENTRY

PART 1 GENERAL

- 1.1 REFERENCES
- 1.2 SUBMITTALS
- 1.3 DELIVERY AND STORAGE

PART 2 PRODUCTS

- 2.1 WOOD ITEMS AND TRIM
 - 2.1.1 Grading and Marking
 - 2.1.2 Sizes and Patterns
 - 2.1.3 Moisture Content
 - 2.1.4 Preservative Treatment
 - 2.1.4.1 Exterior Wood Molding and Millwork
 - 2.1.5 Fascias and Trim
 - 2.1.5.1 Wood
 - 2.1.6 Moldings
- 2.2 NAILS

PART 3 EXECUTION

- 3.1 GENERAL
 - 3.1.1 Preservative Treatment
- 3.2 FASCIAS AND EXTERIOR TRIM
- 3.3 TABLE I

-- End of Section Table of Contents --

SECTION 06200

FINISH CARPENTRY

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM A 153/A 153M (1998) Zinc Coating (Hot-Dip) on Iron and Steel Hardware

ASTM F 547 (1977; R 1995) Definitions of Terms Relating to Nails for Use with Wood and Wood-Base Materials

AMERICAN WOOD-PRESERVERS' ASSOCIATION (AWPA)

AWPA M4 (1996) Standard for the Care of Preservative-Treated Wood Products

CALIFORNIA REDWOOD ASSOCIATION (CRA)

CRA RIS-01-SS (1997) Standard Specifications for Grades of California Redwood Lumber

WEST COAST LUMBER INSPECTION BUREAU (WCLIB)

WCLIB Std 17 (1996; Supples VII(A-E), VIII(A-C)) Grading Rules For West Coast Lumber

WESTERN WOOD PRODUCTS ASSOCIATION (WWPA)

WWPA Grading Rules (1995; Supple Nos. 1 thru 5) Western Lumber Grading Rules 95

WOOD MOULDING AND MILLWORK PRODUCERS ASSOCIATION (WMPMA)

WMPMA WM 6 (1987) Industry Standard for Non-Pressure Treating of Wood Millwork

1.2 SUBMITTALS

Government approval is required for submittals with a "GA" designation; submittals having an "FIO" designation are for information only. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-01 Data

Wood Items and Trim; FIO.

Manufacturer's printed data indicating the usage of engineered or recycled wood products, and environmentally safe preservatives.

SD-04 Drawings

Finish Carpentry; FIO.

Drawings showing fabricated items and special mill and woodwork items. Drawings shall indicate materials and details of construction, methods of fastening, erection, and installation of all repairs.

SD-14 Samples

Fascias and Trim; FIO.

Samples shall be of sufficient size to show patterns, color ranges, and types, as applicable, of the material proposed to be used.

1.3 DELIVERY AND STORAGE

Materials shall be delivered to the site in undamaged condition, stored off ground in fully covered, well-ventilated areas, and protected from extreme changes in temperature and humidity.

PART 2 PRODUCTS

2.1 WOOD ITEMS AND TRIM

The Contractor shall furnish products which optimize design by reducing the amount of wood used (engineered wood), or recycled wood products, and preservatives without arsenic or chromium when the products and methods are competitive in price or directed by the Contracting Officer.

2.1.1 Grading and Marking

Materials shall bear the grademark, stamp or other identifying marks indicating grades of material and rules or standards under which produced. Such identifying marks on a material shall be in accordance with the rule or standard under which the material is produced, including requirements for qualifications and authority of the inspection organization, usage of authorized identification, and information included in the identification. The inspection agency for lumber shall be certified by the Board of Review, American Lumber Standards Committee, to grade the species used. Surfaces that are to be architecturally exposed to view shall not bear grademarks, stamps, or other types of identifying marks.

2.1.2 Sizes and Patterns

Lumber sizes and patterns shall conform to rules or standards under which produced. Unless otherwise specified, lumber shall be surfaced on four sides. Sizes and patterns for materials other than lumber shall conform to requirements of the rules or standards under which produced. Size references, unless otherwise specified, are nominal sizes, and actual sizes shall be within manufacturing tolerances allowed by the standard under which the product is produced, except that replacement pieces shall be the same actual size as the pieces they connect with.

2.1.3 Moisture Content

Moisture content of all material shall be in accordance with the standard under which the product is produced.

2.1.4 Preservative Treatment

2.1.4.1 Exterior Wood Molding and Millwork

Exterior wood molding and millwork shall be preservative-treated in accordance with WMPMA WM 6. Exposed areas of treated wood that are cut or drilled after treatment shall receive a field treatment in accordance with AWPMA M4. Items of all-heart material of cedar, cypress, or redwood will not require preservative treatment, except when in direct contact with soil.

2.1.5 Fascias and Trim

2.1.5.1 Wood

Fascias and trim, including exterior rafter repair, soffit repair, and door and window casing, shall be species and grade listed in TABLE I at the end of this section. Sizes shall be as indicated or as necessary to match existing.

2.1.6 Moldings

Moldings shall be of the pattern to match existing and shall be of a grade compatible with the finish specified.

2.2 NAILS

Nails shall be the size and type best suited for the purpose and shall conform to ASTM F 547. Nails shall be hot-dip galvanized when used on exterior work. Screws for use where nailing is impractical shall be size best suited for purpose. All materials shall be hot-dip galvanized in accordance with ASTM A 153/A 153M, Class D.

PART 3 EXECUTION

3.1 GENERAL

3.1.1 Preservative Treatment

Field treat surfaces with preservatives as specified under AWPMA M4 that are covered with new wood.

3.2 FASCIAS AND EXTERIOR TRIM

Exposed surfaces and square edges shall be machine sanded, sealed, and constructed to exclude water. Joints of built-up items, in addition to nailing, shall be glued as necessary for weather-resistant construction. End joints in built-up members shall be well distributed. Joints in flat work shall be shouldered. Backs of wide-faced miters shall be held together with metal rings and glue. Fascias and other flat members shall be in maximum practicable lengths.

3.3 TABLE I

TABLE I. SPECIES AND GRADE TABLES

Grading Rules	Species	Choice	Clear	C Select	C & Better
CRA RIS-01-SS					
	Redwood		X		
WCLIB Std 17					
	Douglas Fir				X
	Larch				X
	Hemlock Fir				X
	Mountain Hemlock				X
	Sitka Spruce				X
WWPA Grading Rules					
	Douglas Fir			X	
	Larch				X
	Hemlock Fir		X		
	Mountain Hemlock				X
	Western Larch		X		
	Idaho White Pine	X			
	Lodgepole Pine		X		
	Ponderosa Pine		X		
	Sugar Pine		X		
	Englemann Spruce		X		
	Douglas Fir South		X		
	Subalpine Fir		X		

NOTE 1: Western Cedar under WCLIB Std 17 shall be Grade B; and under WWPA Grading Rules, Western Cedar shall be Grade A for trim.

NOTE 2: Except as specified in NOTE 3 below, exterior trim shall be any of the species listed above.

-- End of Section --

SECTION TABLE OF CONTENTS

DIVISION 07 - THERMAL & MOISTURE PROTECTION

SECTION 07900

JOINT SEALING

PART 1 GENERAL

- 1.1 REFERENCES
- 1.2 SUBMITTALS
- 1.3 DELIVERY AND STORAGE

PART 2 PRODUCTS

- 2.1 BACKING
 - 2.1.1 Rubber
 - 2.1.2 Synthetic Rubber
 - 2.1.3 Neoprene
- 2.2 BOND-BREAKER
- 2.3 PRIMER
- 2.4 SEALANT
 - 2.4.1 LATEX
 - 2.4.2 ELASTOMERIC
- 2.5 SOLVENTS AND CLEANING AGENTS

PART 3 EXECUTION

- 3.1 GENERAL
 - 3.1.1 Surface Preparation
 - 3.1.2 Concrete and Masonry Surfaces
 - 3.1.3 Steel Surfaces
 - 3.1.4 Aluminum Surfaces
 - 3.1.5 Wood Surfaces
- 3.2 APPLICATION
 - 3.2.1 Masking Tape
 - 3.2.2 Backing
 - 3.2.3 Bond-Breaker
 - 3.2.4 Primer
 - 3.2.5 Sealant
- 3.3 CLEANING

-- End of Section Table of Contents --

SECTION 07900

JOINT SEALING

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM C 509	(1994) Elastomeric Cellular Preformed Gasket and Sealing Material
ASTM C 920	(1995) Elastomeric Joint Sealants
ASTM D 1056	(1991) Flexible Cellular Materials - Sponge or Expanded Rubber

1.2 SUBMITTALS

Government approval is required for submittals with a "GA" designation; submittals having an "FIO" designation are for information only. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-01 Data

Backing; FIO. Bond-Breaker; FIO.

Sealant; FIO.

Manufacturer's descriptive data including storage requirements, shelf life, curing time, instructions for mixing and application, and primer data (if required). A copy of the Material Safety Data Sheet shall be provided for each solvent, primer or sealant material.

SD-13 Certificates

Sealant; FIO.

Certificates of compliance stating that the materials conform to the specified requirements.

1.3 DELIVERY AND STORAGE

Materials shall be delivered to the job in the manufacturer's original unopened containers. The container label or accompanying data sheet shall include the following information as applicable: manufacturer, name of material, formula or specification number, lot number, color, date of manufacture, mixing instructions, shelf life, and curing time at the standard conditions for laboratory tests. Materials shall be handled and

stored to prevent inclusion of foreign materials. Materials shall be stored at temperatures not exceeding 90 degrees F unless otherwise specified by the manufacturer.

PART 2 PRODUCTS

2.1 BACKING

Backing shall be 25 to 33 percent oversize for closed cell and 40 to 50 percent oversize for open cell material, unless otherwise indicated.

2.1.1 Rubber

Cellular rubber sponge backing shall be ASTM D 1056, Type 2, closed cell, Class A, Grade 2A3, round cross section.

2.1.2 Synthetic Rubber

Synthetic rubber backing shall be ASTM C 509, Option I, Type I preformed rods.

2.1.3 Neoprene

Neoprene backing shall be ASTM D 1056, closed cell expanded neoprene cord Type 2, Class C, Grade 2C2.

2.2 BOND-BREAKER

Bond-breaker shall be as recommended by the sealant manufacturer to prevent adhesion of the sealant to backing or to bottom of the joint.

2.3 PRIMER

Primer shall be non-staining type as recommended by sealant manufacturer for the application.

2.4 SEALANT

2.4.1 LATEX

Siliconized acrylic latex sealant for patching non-moving cracks in wood, stucco, etc. for the subsequent application of paint. Material shall be recommended for exposure and substrates as used.

2.4.2 ELASTOMERIC

Elastomeric sealants shall conform to ASTM C 920, the manufacturer's recommendations, and the following:

Polysulfide or Polyurethane Sealant for Joints at Perimeter of Doors and Windows and Other Non-Traffic Moving Joints: Type S or M, Grade NS, Class 25, Use NT, M, G, A, and O.

2.5 SOLVENTS AND CLEANING AGENTS

Solvents, cleaning agents, and accessory materials shall be provided as recommended by the manufacturer.

PART 3 EXECUTION

3.1 GENERAL

3.1.1 Surface Preparation

The surfaces of joints to receive sealant shall be free of all condensation and moisture. Oil, grease, dirt, chalk, particles of mortar, dust, loose rust, loose mill scale, and other foreign substances shall be removed from surfaces of joints to be in contact with the sealant. Oil and grease shall be removed with solvent and surfaces shall be wiped dry with clean cloths. For surface types not listed below, the sealant manufacturer shall be contacted for specific recommendations.

3.1.2 Concrete and Masonry Surfaces

Laitance, efflorescence and loose mortar shall be removed from the joint cavity.

3.1.3 Steel Surfaces

Steel surfaces to be in contact with sealant shall be sandblasted or, if sandblasting would not be practical or would damage adjacent finish work, the metal shall be scraped and wire brushed to remove loose mill scale. Protective coatings on steel surfaces shall be removed by sandblasting or by a solvent that leaves no residue.

3.1.4 Aluminum Surfaces

Aluminum surfaces to be in contact with sealants shall be cleaned of temporary protective coatings. When masking tape is used for a protective cover, the tape and any residual adhesive shall be removed just prior to applying the sealant. Solvents used to remove protective coating shall be as recommended by the manufacturer of the aluminum work and shall be non-staining.

3.1.5 Wood Surfaces

Wood surfaces to be in contact with sealants shall be free of splinters and sawdust or other loose particles.

3.2 APPLICATION

3.2.1 Masking Tape

Masking tape shall be placed on the finish surface on one or both sides of a joint cavity to protect adjacent finish surfaces from primer or sealant smears. Masking tape shall be removed within 10 minutes after joint has been filled and tooled.

3.2.2 Backing

Backing shall be installed to provide the indicated sealant depth. The installation tool shall be shaped to avoid puncturing the backing.

3.2.3 Bond-Breaker

Bond-breaker shall be applied to fully cover the bottom of the joint without contaminating the sides where sealant adhesion is required.

3.2.4 Primer

Primer shall be used on concrete masonry units, wood, or other porous surfaces in accordance with instructions furnished with the sealant. Primer shall be applied to the joint surfaces to be sealed. Surfaces adjacent to joints shall not be primed.

3.2.5 Sealant

Sealant shall be used before expiration of shelf life. Multi-component sealants shall be mixed according to manufacturer's printed instructions. Sealant in guns shall be applied with a nozzle of proper size to fit the width of joint. Joints shall be sealed as detailed in the drawings. Sealant shall be forced into joints with sufficient pressure to expel air and fill the groove solidly. Sealant shall be installed to the indicated depth without displacing the backing. Unless otherwise indicated, specified, or recommended by the manufacturer, the installed sealant shall be dry tooled to produce a uniformly smooth surface free of wrinkles and to ensure full adhesion to the sides of the joint; the use of solvents, soapy water, etc., will not be allowed. Sealants shall be installed free of air pockets, foreign embedded matter, ridges and sags. Sealer shall be applied over the sealant when and as specified by the sealant manufacturer.

3.3 CLEANING

The surfaces adjoining the sealed joints shall be cleaned of smears and other soiling resulting from the sealant application as work progresses.

-- End of Section --

SECTION TABLE OF CONTENTS

DIVISION 09 - FINISHES

SECTION 09900

PAINTING, GENERAL

PART 1 GENERAL

- 1.1 REFERENCES
- 1.2 SUBMITTALS
- 1.3 PACKAGING, LABELING, AND STORING
- 1.4 APPROVAL OF MATERIALS
- 1.5 ENVIRONMENTAL CONDITIONS
- 1.6 SAFETY AND HEALTH
 - 1.6.1 Worker Exposures
 - 1.6.2 Toxic Compounds
 - 1.6.3 Training
 - 1.6.4 Coordination
- 1.7 SURFACES WITH LEAD-BASED PAINT (LBP)
- 1.8 TRIMMING OF ADJACENT LANDSCAPING

PART 2 PRODUCTS

- 2.1 PAINT
 - 2.1.1 Colors and Tints
 - 2.1.2 Mildewcide and Insecticide
 - 2.1.3 Lead
 - 2.1.4 Chromium
 - 2.1.5 Cement Wash Finish

PART 3 EXECUTION

- 3.1 PROTECTION OF AREAS NOT TO BE PAINTED
- 3.2 SURFACE PREPARATION
 - 3.2.1 Mildew Removal
 - 3.2.2 Concrete, Stucco and Masonry Surfaces
 - 3.2.3 Ferrous Surfaces
 - 3.2.4 Nonferrous Metallic Surfaces
 - 3.2.5 Mastic-Type Surfaces
 - 3.2.6 Wood Surfaces
 - 3.2.7 Previously Painted Surfaces
- 3.3 MIXING AND THINNING
- 3.4 APPLICATION
 - 3.4.1 First Coat
 - 3.4.2 Timing
 - 3.4.3 Fillers
- 3.5 MISCELLANEOUS PAINTING
 - 3.5.1 Lettering
 - 3.5.2 Cement Wash Finish
- 3.6 SURFACES TO BE PAINTED
 - 3.6.1 Existing Stencilled Painted Signage
 - 3.6.2 Existing Surfaces

- 3.7 SURFACES NOT TO BE PAINTED
- 3.8 CLEANING
- 3.9 PAINTING SCHEDULES

-- End of Section Table of Contents --

SECTION 09900

PAINTING, GENERAL

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

AMERICAN CONFERENCE OF GOVERNMENTAL INDUSTRIAL HYGIENISTS (ACGIH)

ACGIH Limit Values	(1996) Threshold Limit Values for Chemical Substances and Physical Agents and Biological Exposure Indices
--------------------	---

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM D 3273	(1994) Resistance to Growth of Mold on the Surface of Interior Coating in an Environmental Chamber
ASTM D 3274	(1995) Evaluating Degree of Surface Disfigurement of Paint Films by Microbial (Fungal or Algal) Growth or Soil and Dirt Accumulation
ASTM D 4214	(1998) Evaluating Degree of Chalking of Exterior Paint Films
ASTM D 4258	(1999) Surface Cleaning Concrete for Coating

FEDERAL SPECIFICATIONS (FS)

FS TT-E-2784	(Rev A) Enamel (Acrylic-Emulsion, Exterior Gloss and Semigloss) (Metric)
--------------	--

STEEL STRUCTURES PAINTING COUNCIL (SSPC)

SSPC Paint 23	(1982) Latex Primer for Steel surfaces
SSPC SP 1	(1982) Solvent Cleaning
SSPC SP 2	(1995) Hand Tool Cleaning
SSPC SP 3	(1995) Power Tool Cleaning
SSPC SP 7/NACE 4	(1994) Brush-Off Blast Cleaning

1.2 SUBMITTALS

Government approval is required for submittals with a "GA" designation;

submittals having an "FIO" designation are for information only. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-01 Data

Paint; FIO.

The names, quantity represented, and intended use for the proprietary brands of materials proposed to be substituted for the specified materials when the required quantity of a particular batch is 50 gallons or less.

SD-06 Instructions

Mixing and Thinning; FIO. Application; FIO.

Manufacturer's current printed product description, material safety data sheets (MSDS) and technical data sheets for each coating system.

SD-09 Reports

Paint; FIO.

A statement as to the quantity represented and the intended use, plus the following test report for batches in excess of 50 gallons:

- a. A test report showing that the proposed batch to be used meets specified requirements:
- b. A test report showing that a previous batch of the same formulation as the batch to be used met specified requirements, plus, on the proposed batch to be used, a report of test results for properties of weight per gallon, viscosity, fineness of grind, drying time, color, and gloss.

SD-13 Certificates

Lead; FIO. Mildewcide and Insecticide; FIO.

Certificate stating that paints for interior use contain no mercurial mildewcide or insecticide. Certificate stating that paints proposed for use contain not more than 0.06 percent lead by weight of the total nonvolatile.

SD-14 Samples

Paint; FIO.

While the material is at the site or source of supply, and at a time agreeable to the Contractor and the Contracting Officer, a 1 quart sample of each color and batch, except for quantities of 50 gallons or less, shall be taken by random selection from the sealed containers by the Contractor in the presence of a representative of the Contracting Officer. The contents of the containers to be sampled shall be thoroughly mixed to ensure that the sample is representative. Samples shall be identified by designated name, specification number, manufacturer name and address, batch number, project contract number, intended use, and quantity involved.

1.3 PACKAGING, LABELING, AND STORING

Paints shall be in sealed containers that legibly show the designated name, formula or specification number, batch number, color, quantity, date of manufacture, manufacturer's formulation number, manufacturer's directions including any warnings and special precautions, and name of manufacturer. Pigmented paints shall be furnished in containers not larger than 5 gallons. Paints and thinner shall be stored in accordance with the manufacturer's written directions and as a minimum stored off the ground, under cover, with sufficient ventilation to prevent the buildup of flammable vapors and at temperatures below 95 degrees F. Paints shall be stored on the project site or segregated at the source of supply sufficiently in advance of need to allow 30 days for testing.

1.4 APPROVAL OF MATERIALS

When samples are tested, approval of materials will be based on tests of the samples; otherwise, materials will be approved based on test reports furnished with them. If materials are approved based on test reports furnished, samples will be retained by the Government for testing should the materials appear defective during or after application. In addition to any other remedies under the contract the cost of retesting defective materials will be at the Contractor's expense.

1.5 ENVIRONMENTAL CONDITIONS

Unless otherwise recommended by the paint manufacturer, the ambient temperature shall be below 95 degrees F when applying coatings other than water-thinned coatings. Water-thinned coatings shall be applied only when ambient temperature is below 90 degrees F.

1.6 SAFETY AND HEALTH

Work shall comply with applicable Federal, State, and local laws and regulations, and with the ACCIDENT PREVENTION PLAN, including the Activity Hazard Analysis as specified in the CONTRACT CLAUSES. The Activity Hazard Analysis shall include analyses of the potential impact of painting operations on painting personnel and on others involved in and adjacent to the work zone.

1.6.1 Worker Exposures

Exposure of workers to hazardous chemical substances shall not exceed limits established by ACGIH Limit Values, or as required by a more stringent applicable regulation.

1.6.2 Toxic Compounds

Toxic products having ineffective physiological warning properties, such as no or low odor or irritation levels, shall not be used unless approved by the Contracting Officer.

1.6.3 Training

Workers having access to an affected work area shall be informed of the contents of the applicable material data safety sheets (MDSS) and shall be informed of potential health and safety hazard and protective controls associated with materials used on the project. An affected work area is one which may receive mists and odors from the painting operations. Workers involved in preparation, painting and clean-up shall be trained in

the safe handling and application, and the exposure limit, for each material which the worker will use in the project. Personnel having a need to use respirators and masks shall be instructed in the use and maintenance of such equipment.

1.6.4 Coordination

Work shall be coordinated to minimize exposure of building occupants, other Contractor personnel, and visitors to mists and odors from preparation, painting and clean-up operations.

1.7 SURFACES WITH LEAD-BASED PAINT (LBP)

Surfaces with lead-based paint shall be abated and prepared for repainting under Section 13283 LEAD-BASED PAINT (LBP) ABATEMENT AND DISPOSAL.

1.8 TRIMMING OF ADJACENT LANDSCAPING

Shrubbery and plants shall be trimmed 6 inches back from surfaces to be painted and protected from damage.

PART 2 PRODUCTS

2.1 PAINT

The term "paint" as used herein includes emulsions, enamels, paints, stains, varnishes, sealers, cement-emulsion filler, and other coatings, whether used as prime, intermediate, or finish coat. Paint shall conform to the requirements listed in the painting schedules at the end of this section, except when the required amount of a material of a particular batch is 50 gallons or less, an approved first-line proprietary paint material with similar intended formulation, usage and color to that specified may be used. Additional requirements are as follows:

2.1.1 Colors and Tints

Colors shall be as selected from manufacturer's standard colors, as indicated. Manufacturer's standard color is for identification of color only.

2.1.2 Mildewcide and Insecticide

Paint specified for all coats shall contain a mildewcide that will not adversely affect the color, texture, or durability of the coating. The mildewcide shall be incorporated into the paint by the manufacturer and shall attain a surface disfigurement rating of 8 or greater when tested in accordance with ASTM D 3273 and evaluated in accordance with ASTM D 3274. Mercurial mildewcide shall not be used in interior paint. Insecticides shall not be used in paint.

2.1.3 Lead

Paints containing lead in excess of 0.06 percent by weight of the total nonvolatile content (calculated as lead metal) shall not be used.

2.1.4 Chromium

Paints containing zinc chromate or strontium chromate pigments shall not be used.

2.1.5 Cement Wash Finish

Provide a cement based coating system to provide a textured surface to match existing for field painting. Coating system shall be a base and finish acrylic system similar to an exterior finish system or equal. Base coat shall be an acrylic mix field mixed with Type I or II Portland cement. Top coat shall be a factory mixed acrylic resin finish with uniformly sized aggregate for a sand texture finish to match existing.

PART 3 EXECUTION

3.1 PROTECTION OF AREAS NOT TO BE PAINTED

Items not to be painted which are in contact with or adjacent to painted surfaces shall be removed or protected prior to surface preparation and painting operations. Items removed prior to painting shall be replaced when painting is completed. Following completion of painting, workmen skilled in the trades involved shall reinstall removed items. Surfaces contaminated by coating materials shall be restored to original condition.

3.2 SURFACE PREPARATION

Surfaces to be painted shall be clean and free of foreign matter before application of paint or surface treatments. Oil and grease shall be removed prior to mechanical cleaning. Cleaning shall be programmed so that dust and other contaminants will not fall on wet, newly painted surfaces. Exposed ferrous metals such as nail heads on or in contact with surfaces to be painted with water-thinned paints, shall be spot-primed with a suitable corrosion-inhibitive primer capable of preventing flash rusting and compatible with the coating specified for the adjacent areas.

3.2.1 Mildew Removal

Remove all mildew and sterilize the surface to be painted using one of the following methods:

Apply a treatment solution composed of the following ingredients and in the noted proportions to the affected surfaces using a sponge or low-pressure sprayer:

- 2/3 cup TSP (Trisodium Phosphate)
- 1 quart household bleach
- 3 quarts warm water

Note: Household bleach shall not be mixed with ammonia or any detergents or cleaners containing ammonia as this will create a poisonous gas.

Scrub the surface as necessary to completely remove the mildew.

or,

Apply a commercial mildew treatment solution such as Purex, Jomax Remover or equal in strict accordance with the manufacturer's recommendations and instructions.

Following treatment, the surface shall be cleaned with potable water and allowed to thoroughly dry before priming, painting or the applying of

sealing and caulking compounds.

3.2.2 Concrete, Stucco and Masonry Surfaces

Stucco repair surfaces shall be allowed to dry as recommended by the paint manufacturer before painting. Surfaces shall be cleaned in accordance with ASTM D 4258. Glaze, efflorescence, laitance, dirt, grease, oil, asphalt, surface deposits of free iron and other foreign matter shall be removed prior to painting.

3.2.3 Ferrous Surfaces

Ferrous surfaces including those that have been shop-coated, shall be solvent-cleaned or detergent-washed in accordance with SSPC SP 1. Surfaces that contain loose rust, loose mill scale, and other foreign substances shall be cleaned mechanically with hand tools according to SSPC SP 2, power tools according to SSPC SP 3 or by sandblasting according to SSPC SP 7/NACE 4. Shop-coated ferrous surfaces shall be protected from corrosion by treating and touching up corroded areas immediately upon detection.

3.2.4 Nonferrous Metallic Surfaces

Galvanized, aluminum and aluminum-alloy, lead, copper, and other nonferrous metal surfaces shall be solvent-cleaned or detergent-washed in accordance with SSPC SP 1.

3.2.5 Mastic-Type Surfaces

Mastic-type surfaces shall be prepared by removing foreign material.

3.2.6 Wood Surfaces

Wood surfaces shall be cleaned of foreign matter. Moisture content of the wood shall not exceed 12 percent as measured by a moisture meter, unless otherwise authorized. Wood surfaces adjacent to surfaces to receive water-thinned paints shall be primed and/or touched up before applying water-thinned paints. Small, dry seasoned knots shall be scraped, cleaned, and given a thin coat of commercial knot sealer, before application of the priming coat. Pitch on large, open, unseasoned knots and all other beads or streaks of pitch shall be scraped off, or, if it is still soft, removed with mineral spirits or turpentine, and the resinous area shall be thinly coated with knot sealer. Finishing nails shall be set, and all holes and surface imperfections shall be primed. After priming, holes and imperfections in finish surfaces shall be filled with putty or plastic wood filler, colored to match the finish coat if natural finish is required, allowed to dry, and sanded smooth. Putty or wood filler shall be compatible with subsequent coatings.

3.2.7 Previously Painted Surfaces

Previously painted surfaces specified to be repainted shall be thoroughly cleaned of all grease, dirt, dust or other foreign matter. Blistering, cracking, flaking and peeling or other deteriorated coatings shall be removed. Slick surfaces shall be roughened. Damaged areas such as, but not limited to, nail holes, cracks, chips, and spalls shall be repaired with suitable material to match adjacent undamaged areas. Edges of chipped paint shall be feather edged and sanded smooth. Rusty metal surfaces shall be cleaned as per SSPC requirements. Solvent, mechanical, or chemical cleaning methods shall be used to provide surfaces suitable for painting.

Chalk shall be removed so that when tested in accordance with ASTM D 4214, the chalk resistance rating is no less than 8. New, proposed coatings shall be compatible with existing coatings. If existing surfaces are glossy, the gloss shall be reduced. Preparation of surfaces with lead-based paint shall be abated and prepared under Section 13283 LEAD-BASED PAINT (LBP) ABATEMENT AND DISPOSAL.

3.3 MIXING AND THINNING

When thinning is approved as necessary to suit surface, temperature, weather conditions, or application methods, paints may be thinned in accordance with the manufacturer's directions. When thinning is allowed, paints shall be thinned immediately prior to application with not more than 1 pint of suitable thinner per gallon. The use of thinner shall not relieve the Contractor from obtaining complete hiding, full film thickness, or required gloss. Paints of different manufacturers shall not be mixed.

3.4 APPLICATION

Painting practices shall comply with applicable federal, state and local laws enacted to insure compliance with Federal Clean Air Standards. Unless otherwise specified or recommended by the paint manufacturer, paint may be applied by brush or roller. At the time of application, paint shall show no signs of deterioration. Uniform suspension of pigments shall be maintained during application. Each coat of paint shall be applied so dry film shall be of uniform thickness and free from runs, drops, ridges, waves, pinholes or other voids, laps, brush marks, and variations in color, texture, and finish. Hiding shall be complete. Rollers for applying paints and enamels shall be of a type designed for the coating to be applied and the surface to be coated. Special attention shall be given to insure that all edges, corners, crevices, welds, and rivets receive a film thickness equal to that of adjacent painted surfaces. Paints, except water-thinned types, shall be applied only to surfaces that are completely free of moisture as determined by sight or touch.

3.4.1 First Coat

The first coat on repaired bare surfaces shall include repeated touching up of suction spots or overall application of primer or sealer to produce uniform color and gloss. Excess sealer shall be wiped off after each application.

3.4.2 Timing

Surfaces that have been cleaned, pretreated, and otherwise prepared for painting shall be given a coat of the specified first coat as soon as practical after such pretreatment has been completed, but prior to any deterioration of the prepared surface. Sufficient time shall elapse between successive coats to permit proper drying. This period shall be modified as necessary to suit weather conditions.

3.4.3 Fillers

Concrete, masonry, and stucco surface voids shall be filled; however, surface irregularities need not be completely filled. The dried filler shall be uniform and free of pinholes. Filler shall not be applied over sealant compound.

3.5 MISCELLANEOUS PAINTING

3.5.1 Lettering

Lettering shall be provided to match existing, Gothic type, in black. Paint over existing signage and repaint with two coats of paint to match existing.

3.5.2 Cement Wash Finish

Apply to areas as noted to match existing. Protect all other areas as landscaping from spray and rebound. Texture shall match existing.

3.6 SURFACES TO BE PAINTED

Surfaces listed in the painting schedules at the end of this section, other than those listed in paragraph SURFACES NOT TO BE PAINTED, shall be painted as scheduled.

3.6.1 Existing Stencilled Painted Signage

Paint over signage and repaint with two coats of paint to match existing.

3.6.2 Existing Surfaces

Existing surfaces to be repainted where paint is in sound condition, and if the color of the new paint is the same as the existing, shall be given one finish coat as specified in the PAINTING SCHEDULE for the respective type of surface. If the color of the new paint is different from the existing, two coats shall be applied to obtain complete hiding. Surfaces that are completely exposed shall be painted as specified for new surfaces.

3.7 SURFACES NOT TO BE PAINTED

Surfaces in the following areas shall not to be painted: Owner stained doors, wood decks, and other surfaces as listed. In addition, surfaces of hardware, fittings, and other factory finished items shall not be painted.

3.8 CLEANING

Cloths, cotton waste and other debris that might constitute a fire hazard shall be placed in closed metal containers and removed at the end of each day. Upon completion of the work, staging, scaffolding, and containers shall be removed from the site or destroyed in an approved manner. Paint and other deposits on adjacent surfaces shall be removed and the entire job left clean and acceptable.

3.9 PAINTING SCHEDULES

The following painting schedules identify the surfaces to be painted and prescribe the paint to be used and the number of coats of paint to be applied. Contractor options are indicated by -----or----- between optional systems or coats.

EXTERIOR PAINTING SCHEDULE

<u>Surface</u>	<u>First Coat</u>	<u>Second Coat</u>	<u>Third Coat</u>
Concrete masonry units.	FS TT-E-2784 Type II, Semi-Gloss	FS TT-E-2784 Type III, Semi-Gloss	None
Concrete, unless otherwise specified.	FS TT-E-2784 Type II, Semi-Gloss	FS TT-E-2784 Type II, Semi-Gloss	None
Stucco.	FS TT-E-2784 Type II, Semi-Gloss	FS TT-E-2784 Type II, Semi-Gloss	None
Wood, unless otherwise specified.	FS TT-E-2784 Type III (For new or bare wood)	FS TT-E-2784 Type II, Semi-Gloss	FS TT-E-2784 Type II Semi-Gloss
Fiber Cement Siding.	FS TT-E-2784 Type III	FS TT-E-2784 Type II, Semi-Gloss	FS TT-E-2784 Type II, Semi-Gloss
Ferrous metal unless otherwise specified.	SSPC Paint 23	FS TT-E-2784 Type II, Semi-Gloss	FS TT-E-2784 Type II, Semi-Gloss
Galvanized metal.	FS TT-E-2784 Type III, Gloss	FS TT-E-2784 Type II, Semi-Gloss	FS TT-E-2784 Type II Semi-Gloss

-- End of Section --

SECTION TABLE OF CONTENTS

DIVISION 13 - SPECIAL CONSTRUCTION

SECTION 13283

LEAD-BASED PAINT (LBP) ABATEMENT AND DISPOSAL

PART 1 GENERAL

- 1.1 REFERENCES
- 1.2 SUBMITTALS
- 1.3 QUALITY ASSURANCE
 - 1.3.1 Qualifications
 - 1.3.2 Respiratory Protection Devices
 - 1.3.3 Cartridges, Filters, and Vacuum Systems
 - 1.3.4 Medical Records
 - 1.3.5 Training
 - 1.3.6 Licenses and Permits
- 1.4 DESCRIPTION OF WORK
- 1.5 SITE VISIT
- 1.6 LIABILITY INSURANCE FOR LBP
- 1.7 PROTECTION OF EXISTING WORK TO REMAIN
- 1.8 COORDINATION WITH OTHER WORK
- 1.9 SAFETY AND HEALTH REGULATORY REQUIREMENTS
- 1.10 PRECONSTRUCTION SAFETY MEETING
- 1.11 ACCIDENT PREVENTION PLAN
 - 1.11.1 Preparation and Implementation
 - 1.11.2 Acceptance and Modifications
 - 1.11.3 Activity Hazard Analyses
- 1.12 RESPIRATORY PROTECTION PROGRAM
- 1.13 HAZARD COMMUNICATION PROGRAM
- 1.14 SAFETY AND HEALTH OVERSIGHT
- 1.15 PREPARATORY INSPECTION MEETING
- 1.16 TRAINED AND COMPETENT PERSONNEL
- 1.17 POSTED WARNINGS AND NOTICES
 - 1.17.1 Regulations
 - 1.17.2 Warning Signs and Labels
 - 1.17.2.1 Warning Signs
 - 1.17.2.2 Warning Labels
 - 1.17.3 Worker Information
 - 1.17.4 Air Monitoring Results
 - 1.17.5 Emergency Telephone Numbers
- 1.18 EQUIPMENT AND MATERIALS
 - 1.18.1 Respirators
 - 1.18.2 Respirator Cartridges
 - 1.18.3 Protective Clothing
 - 1.18.4 Expendable Supplies
 - 1.18.4.1 Polyethylene Sheet and Bags - General
 - 1.18.4.2 Tape and Adhesive Spray
 - 1.18.4.3 Containers
 - 1.18.4.4 Chemicals
 - 1.18.5 Vacuum Systems
- 1.19 STORAGE OF MATERIALS

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION

3.1 WORK PROCEDURES

- 3.1.1 Personnel Protection Procedures
- 3.1.2 Safety and Health Procedures
- 3.1.3 Safety and Health Responsibilities
- 3.1.4 Medical Surveillance Procedures
- 3.1.5 Engineering Controls and Containment Structures
 - 3.1.5.1 LBP Control Area
 - 3.1.5.2 Boundary Requirements
 - 3.1.5.3 Control Barriers
 - 3.1.5.4 Preabatement Lead-Dust Wipe Samples
 - 3.1.5.5 Masking and Sealing
 - 3.1.5.6 Personnel Decontamination Area Procedures
 - 3.1.5.7 Equipment or Material Decontamination Procedures
 - 3.1.5.8 Hand Wash Station Procedures
 - 3.1.5.9 Equipment Decontamination Unit Procedures
 - 3.1.5.10 Maintenance of Decontamination Areas
 - 3.1.5.11 LBP Control Area Exiting Procedures
- 3.1.6 Furnishings
- 3.1.7 Building Ventilating Systems
- 3.1.8 Temporary Utilities

3.2 LBP ABATEMENT METHODS

- 3.2.1 Exterior Enclosure

3.3 MONITORING

- 3.3.1 Personal Air Monitoring
- 3.3.2 Wipe Sampling
 - 3.3.2.1 Preabatement
 - 3.3.2.2 Results
 - 3.3.2.3 Excessive Levels
 - 3.3.2.4 Post Abatement
- 3.3.3 Area Air Monitoring
 - 3.3.3.1 Preabatement
 - 3.3.3.2 Abatement
 - 3.3.3.3 Results
 - 3.3.3.4 Excessive Levels
- 3.3.4 Waste Sampling and Testing

3.4 ADJACENT AREAS

3.5 CLEANUP AND DISPOSAL

- 3.5.1 Cleanup
 - 3.5.1.1 Daily
 - 3.5.1.2 Prior to Clearance
- 3.5.2 Visual Inspection
- 3.5.3 Final Clearance Testing
- 3.5.4 Certification
- 3.5.5 Removal of Control Area
- 3.5.6 Disposal
 - 3.5.6.1 Toxicity Characteristic Leaching Procedure (TCLP) Results
 - 3.5.6.2 Contaminated Waste
 - 3.5.6.3 Non-Contaminated Waste
- 3.5.7 Disposal Documentation
- 3.5.8 Title to Materials
- 3.5.9 Payment for Hazardous Waste

-- End of Section Table of Contents --

SECTION 13283

LEAD-BASED PAINT (LBP) ABATEMENT AND DISPOSAL

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

CODE OF FEDERAL REGULATIONS (CFR)

29 CFR 1910	Occupational Safety and Health Standards
29 CFR 1926	Safety and Health Regulations for Construction
40 CFR 148	Hazardous Waste Injection Restrictions
40 CFR 260	Hazardous Waste Management System: General
40 CFR 261	Identification and Listing of Hazardous Waste
40 CFR 262	Standards Applicable to Generators of Hazardous Waste
40 CFR 263	Standards Applicable to Transporters of Hazardous Waste
40 CFR 264	Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities
40 CFR 265	Interim Status Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities
40 CFR 268	Land Disposal Restrictions
49 CFR 172	Hazardous Materials Table, Special Provisions, Hazardous Materials Communications, Emergency Response Information, and Training Requirements
49 CFR 178	Specifications for Packagings

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT (HUD)

HUD-01	(1996) Lead-Based Paint: Guidelines for the Availability and Control of Lead-Based Paint Hazards in Housing
--------	---

ENGINEERING MANUALS (EM)

EM 385-1-1

(1996) U.S. Army Corps of Engineers Safety
and Health Requirements Manual

NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH (NIOSH)

NIOSH OSHA Booklet 3142

Lead in Construction

1.2 SUBMITTALS

Government approval is required for submittals with a "GA" designation; submittals having an "FIO" designation are for information only. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-01 Data

Equipment List; GA.

A list of equipment items to be used in the work, including brand names, model, capacity, performance characteristics, quantities and other pertinent information.

SD-08 Statements

Lead-Based Paint (LBP) Inventory; GA.

A space-by-space inspection shall be conducted with the Contracting Officer. A written inventory shall be prepared that identifies the LBP containing surfaces. The Government's LBP Management Plan will be the basis of the inventory. Areas and materials identified as containing LBP shall be treated unless the Contractor provides analytical evidence stating that the materials are not contaminated with LBP. If the inventory identifies additional LBP contamination, the Contractor shall make an amendment to the inventory. Costs of sampling and analysis to verify or add to the Contractor's LBP Inventory shall be borne by the Contractor.

Lead-Based Paint (LBP) Management Plan; GA.

The Contractor shall review the specified abatement work tasks and abatement methods and shall prepare a detailed LBP Management Plan that identifies the work procedures, health, and safety measures to be used in LBP abatement. The plan shall address the various sources of lead and the methods to be undertaken to abate the lead hazards to include the following key elements:

- a. Location of LBP containing components keyed to project drawings.
- b. Abatement methods for each LBP containing component.
- c. Means for notifying occupants of proposed work schedules.
- d. Training requirements as required by Federal, state, and local regulations.
- e. Unique problems associated with the LBP abatement project.
- f. Sketch of LBP control areas and decontamination areas.

- g. Eating, drinking, smoking, and rest room procedures.
- h. Sequencing of LBP related work.
- i. Personnel protective equipment; respiratory protection program and controls.
- j. Engineering controls, containment structures and safety measures.
- k. Worker exposure assessment procedures.
- l. Work Practice controls.
- m. Housekeeping.
- n. Hygiene facilities and practice.
- o. Medical surveillance, including medical removal protection.
- p. Sampling, testing and analytical methods to include personal air sampling requirements of 29 CFR 1926 Section .62 and when specified or where required, environmental air sampling, dust wipe sampling (preabatement, post abatement), toxicity characteristic leaching procedure (TCLP) of the waste material in accordance with 40 CFR 261. Procedures must include frequency, locations, and sampling and analytical methods to be used.

Emergency Contingency Plan; GA

An emergency contingency plan shall be prepared in accordance with 40 CFR 261. Procedure must address the following LBP abatement hazards as appropriate to the project:

- a. Major breach of containment barriers.
- b. Detection of unexpected lead levels on adjacent grounds.
- c. Spilling of lead debris bags or containers.
- d. Phone numbers for project manager, local fire, police and medical personnel.

Hazardous Waste Management Plan; GA.

A Hazardous Waste Management Plan shall be prepared that complies with applicable requirements of Federal, state, and local hazardous waste regulations and addresses:

- a. Identification or documentation of potential hazardous wastes associated with the work.
- b. Estimated quantities of wastes to be generated and disposed of.
- c. Names and qualifications of each Contractor that will be transporting, storing, treating, and disposing of the wastes; the facility location, phone number, and name of a 24-hour point of contact shall be included. Two copies of EPA, state, and local hazardous waste permit applications, permits, and EPA

identification numbers.

- d. Names and qualifications (experience and training) of personnel who will be working onsite with hazardous waste.
- e. List of waste handling equipment to be used in performing the work to include cleaning, volume reduction, and transport equipment.
- f. Spill prevention, containment, and clean-up contingency measures to be implemented.
- g. Work plan and schedule for waste containment, removal, and disposal. Waste shall be cleaned up and containerized daily.
- h. Cost for hazardous waste disposal according to this plan.

Waste Handling and Site Storage Plan; GA.

A Handling and Site Storage Plan shall be prepared that addresses the handling and storage of LBP debris in accordance with the requirement of 40 CFR 262 and 40 CFR 265. The Contractor shall confirm that an EPA identification number has been obtained so that proper manifesting of the waste will be addressed, and that site storage limitations, including the time of storage, container requirements, contingency plan, and personnel training have been complied with.

Waste Disposal Plan; GA.

A Waste Disposal Plan shall be prepared that will include but not be limited to the following:

- a. A written confirmation that the debris will be treated and disposed of in accordance with the requirements of 40 CFR 260, 40 CFR 261, 40 CFR 262, 40 CFR 264 and 40 CFR 268.
- b. A written confirmation that transportation of the debris will be in accordance with 40 CFR 263.
- c. Waste subcontractor's name, address, telephone number, and landfill location, including copies of licenses and signed agreements.
- d. Landfill name, address, and telephone number. A copy of the landfill's state and locally issued license, and a signed agreement that the landfill will accept the LBP wastes.
- e. Detailed delivery tickets prepared, signed, and dated by an agent of the landfill, certifying the amount of LBP containing materials delivered to the landfill, within 3 days after delivery.

SD-09 Reports

Sampling Result; GA.

A daily log of the personal and environmental air sampling test results shall be reviewed by the Certified Industrial Hygienist (CIH) and submitted, in written form, no more than 72 hours after completion of the sampling cycle. The log shall list each sample result, sampling time and date, sample type, identification of personnel monitored, flow rate and

duration, air volume sampled, yield of lead, cassette size, analytical method used, analyst's name and company, and interpretation of results. Results shall be reported in micrograms of lead per cubic meter of air. In addition, the daily log shall include the results of dust wipe samples, soil samples and TCLP sampling including each phase of preabatement, during abatement and final clearance. Documentation of results that exceed specified limits (personal air samples that exceed 30 micrograms per cubic meter) or as required by Federal, state or local requirements shall be highlighted in the log in such a manner to make them easily distinguishable from monitoring results that do not exceed specified or regulatory limits.

SD-13 Certificates

Quality Assurance; GA.

Certificates shall meet the requirements of paragraph QUALITY ASSURANCE. The statements shall be signed and dated by a certifying officer after the award of this contract and contain the following:

- a. Contractor's name and address.
- b. Project name and location.
- c. The specified requirements that are being certified.

1.3 QUALITY ASSURANCE

1.3.1 Qualifications

- a. Contractor: Certification that the Contractor has prior experience on LBP abatement projects similar in nature and extent to ensure the capability to perform the abatement in a satisfactory manner.
- b. Competent Person: Certification that the Contractor's full-time onsite Competent Person meets the competent person requirements of 29 CFR 1926 Section .62 and is experienced in administration and supervision of LBP abatement projects, including work practices, protective measures for building and personnel, disposal procedures, etc. This person shall have completed a Contractor Supervisor LBP abatement course by an EPA Training Center or an equivalent certification course, and have had a minimum of 2 years on-the-job experience.
- c. Certified Industrial Hygienist (CIH): Certification that the CIH has 2 years prior experience on similar LBP abatement projects and is certified by the American Board of Industrial Hygiene (ABIH). The certification shall include a copy of the ABIH certificate showing certification number, and date of certification or recertification.
- d. Industrial Hygienist: Certification that the Industrial Hygienist meets the Office of Personnel Management Standard for the Industrial Hygiene Series GS-690, and has a minimum of two years experience in LBP abatement.
- e. Testing Laboratory: The name, address, and telephone number of the independent testing laboratory selected to perform analysis for personal and environmental air samples lead dust wipes, and

TCLP analysis. Documentation that the laboratory performing the analysis is an EPA National Lead Laboratory Accreditation Program (NLLAP) accredited laboratory and that it is rated proficient in the NIOSH/EPA Environmental Lead Proficiency Analytical Testing Program (ELPAT). Certification shall include accreditation for heavy metal analysis, list of experience relevant to analysis of lead in air, and a Quality Assurance and Quality Control Program. Currently, the American Association for Laboratory Accreditation (ASLA) and the American Industrial Hygiene Association (AIHA) are the EPA recognized laboratory accreditors. Documentation shall include the date of accreditation or reaccreditation.

- f. Blood Lead Testing Laboratory. The name, address and telephone number of the blood lead testing laboratory; the laboratory's listing by OSHA and the U.S. Public Health Service Center for Disease Control (CDC); and documentation that the laboratory certified in the state where the work site is located.

1.3.2 Respiratory Protection Devices

Manufacturer's certification of NIOSH approval for respiratory protection devices utilized on the site.

1.3.3 Cartridges, Filters, and Vacuum Systems

Manufacturer's certification of NIOSH approval of respirator cartridges (organic vapor, acid gas, mist, dust, high efficiency particulate); High Efficiency Particulate Air (HEPA) filtration capabilities for all cartridges, filters, and HEPA vacuum systems.

1.3.4 Medical Records

Certification that employees who are involved in LBP abatement work have received medical examinations and will receive continued medical surveillance, including biological monitoring, as required by 29 CFR 1926 Section .62 and by the state and local regulations pertaining to such work. Records shall be retained, at Contractor expense, in accordance with 29 CFR 1910 Section .20.

1.3.5 Training

Training certification shall be provided prior to the start of work involving LBP abatement, for all of the Contractors' workers, supervisors and the Competent Person. Training shall meet the requirements of 29 CFR 1926 Section .62, 29 CFR 1926 Section .59 and 49 CFR 172, and that required by EPA or the state LBP course for the work to be performed. Training shall be provided prior to the time of job assignment and, at least, annually. Training may cover all abatement methods or focus only on those methods specified in the LBP Management Plan. The project specific training shall, as a minimum, include the following:

- a. Specific nature of the operation which could result in exposure to lead.
- b. Purpose, proper selection, fitting, use, and limitations of respirators.
- c. Purpose and description of the medical surveillance program and the medical removal protection program, including information

concerning the adverse health effects associated with excessive exposure to lead (with particular attention to the adverse reproductive effects on both males and females and hazards to the fetus and additional precautions for employees who are pregnant).

- d. Relevant engineering controls and good work practices.
- e. The contents of any compliance plan in effect.
- f. Instructions to employees that chelating agents should not routinely be used to remove lead from their bodies and should not be used at all except under the direction of a licensed physician.
- g. The employee's right of access to records under 29 CFR 1910Section .20.

1.3.6 Licenses and Permits

Copies of licenses and permits as required by applicable Federal, state, and local regulations shall be obtained at least 20 days before the start of the LBP abatement project.

1.4 DESCRIPTION OF WORK

Loose and flaking LBP is to be removed. Work includes wet scraping of deteriorated paint prior to repainting.

1.5 SITE VISIT

Contractor shall visit and investigate the site, review the drawings and specifications, assess the amount of LBP, and become familiar with conditions which will affect the work.

1.6 LIABILITY INSURANCE FOR LBP

LBP abatement liability insurance shall be obtained without additional expense to the Government. The Contractor shall assume full responsibility and liability for the compliance with Federal, state, and local regulations pertaining to training, work practices, hauling, disposal, and protection of workers, visitors to the site, and persons occupying areas adjacent to the site.

1.7 PROTECTION OF EXISTING WORK TO REMAIN

Abatement, storage, transportation, and disposal work shall be performed without damaging or contaminating adjacent work and areas. Where such work or areas are damaged or contaminated, the Contractor shall restore work and areas to the original condition.

1.8 COORDINATION WITH OTHER WORK

Abatement and disposal work shall be coordinated with existing work and/or concurrent work being performed in adjacent areas.

1.9 SAFETY AND HEALTH REGULATORY REQUIREMENTS

Work shall be performed in accordance with requirements of EM 385-1-land applicable regulations including, but not limited to 29 CFR 1910, 29 CFR 1926, especially Section .62. Matters of interpretation of the standards

shall be submitted to the appropriate agency for resolution before starting work. Where these requirements vary, the most stringent shall apply.

1.10 PRECONSTRUCTION SAFETY MEETING

The Contractor and CIH and IH shall attend a preconstruction safety meeting prior to starting any work involving LBP abatement. Items required to be submitted will be reviewed for completeness, and where specified, for acceptance.

1.11 ACCIDENT PREVENTION PLAN

1.11.1 Preparation and Implementation

The Accident Preparation Plan (APP) shall be prepared in accordance with EM 385-1-1, Table 1-1. Where topic in table 1-1 is not applicable, the APP shall justify its omission or reduced level of detail, and establish that adequate consideration was given to the topic. The APP shall cover onsite work by the Contractor or subcontractors. The Competent Person shall be responsible for development, implementation, and quality control of the content and actions required in the APP. For each anticipated work task, the APP shall establish hazards and control measures. The APP shall be easily readable and understandable by the Contractor's work force.

1.11.2 Acceptance and Modifications

The APP shall be prepared, signed and dated by the Contractors Competent Person and submitted 20 days prior to the preconstruction safety conference. Deficiencies in the APP shall be discussed at the Preconstruction Safety Conference and the APP shall be revised to correct the deficiencies, and resubmitted for acceptance. Onsite work shall not begin until the APP has been accepted unless otherwise authorized by the Contracting Officer. One copy of the APP shall be maintained in the Contractor's jobsite file, and a second copy shall be posted where it will be accessible to personnel on the site. As work proceeds, the APP shall be adapted to new situations and conditions. Changes to the APP shall be made with concurrence of the Competent Person and Site Superintendent, and acceptance of the Contracting Officer. Should an unforeseen hazard become evident during performance of the work, the Competent Person shall bring such hazard to the attention of the Superintendent and the Contracting Officer, both verbally and in writing, for resolution as soon as possible. In the interim, the Contractor shall take necessary action to re-establish and maintain safe working conditions; and to safeguard onsite personnel, visitors, the public, and the environment. Disregard for provisions of this specification, or the accepted APP shall be cause for stopping of work until the matter is rectified.

1.11.3 Activity Hazard Analyses

An Activity Hazard Analysis (AHA) shall be prepared prior to beginning each major phase of the work and submitted for review and acceptance. Format shall be in accordance with EM 385-1-1, figure 1-1. A major phase of work is defined as an operation involving hazards not experienced in previous operations, or where a new work crew is to perform. The analysis shall define the activities and the sequence in which they are to be performed, specific hazards anticipated, and control measures to be implemented to eliminate or reduce each hazard to an acceptable level. Work shall not proceed on that phase until the Activity Hazard Analysis has been accepted and a preparatory meeting has been conducted by the Contractor to discuss

content of the AHA with everyone engaged in the activity, including the Government's onsite representative. The AHA shall be continuously reviewed and modified when appropriate to address changing conditions or operations. The accepted AHA shall be appended to and become part of the APP.

1.12 RESPIRATORY PROTECTION PROGRAM

A respiratory protection program shall be established as required by 29 CFR 1926 Section .103 and .62 and in accordance with 29 CFR 1910 Section .134. An approved respirator shall be furnished to each employee and visitor required to enter a LBP work control area. A fit test shall be conducted in accordance with 29 CFR 1926 Section .62, Appendix D.

1.13 HAZARD COMMUNICATION PROGRAM

A Hazard Communication Program shall be implemented in accordance with 29 CFR 1926 Section .59.

1.14 SAFETY AND HEALTH OVERSIGHT

The Competent Person shall be the onsite person responsible for coordination, safety, security and execution of the work. The Competent Person shall be able to identify existing and predictable lead hazards and shall have the authority to take corrective measures to eliminate them. The IH shall be responsible for dust wipe and personal and environmental sampling.

1.15 PREPARATORY INSPECTION MEETING

The Contractor and CIH and IH shall arrange and hold a preparatory inspection meeting immediately prior to beginning any LBP abatement. The APP, Activity Hazard Analyses, and the Contractor's LBP Management Plan, including containment, engineering controls, worker protection, training, and monitoring, will be reviewed for completeness.

1.16 TRAINED AND COMPETENT PERSONNEL

Work shall be performed by Competent Persons, qualified and trained in the abatement, enclosure, encapsulation, monitoring, testing, storage, treatment, hauling, and disposal of contaminated LBP debris material, and in subsequent cleanup of the affected environment. Workers shall comply with the appropriate Federal, state, and local regulations which mandate training requirements and work practices and shall be capable of performing the work under this contract.

1.17 POSTED WARNINGS AND NOTICES

The following regulations, warnings, and notices shall be posted at the work site in accordance with 29 CFR 1926 Section .62.

1.17.1 Regulations

Two copies of applicable Federal, state, and local regulations and NIOSH OSHA Booklet 3142 shall be maintained. One copy shall be posted at the work site and one copy shall be on file in the project office.

1.17.2 Warning Signs and Labels

Warning signs shall be provided at building entrances and approaches to LBP

control areas containing airborne LBP debris. Signs shall be located at a distance from the LBP control areas that will allow personnel to read the sign and take the necessary protective actions required before entering the LBP control area.

1.17.2.1 Warning Signs

Warning signs shall be in English and be of sufficient size to be clearly legible and display the following:

WARNING
LEAD WORK AREA
POISON
NO SMOKING OR EATING
AUTHORIZED PERSONNEL ONLY
RESPIRATORS AND PROTECTIVE CLOTHING ARE REQUIRED IN THIS AREA

1.17.2.2 Warning Labels

Warning labels shall be in English and be of sufficient size to be clearly legible and display the following:

CAUTION: CLOTHING CONTAMINATED WITH LEAD. DO NOT REMOVE DUST BY BLOWING OR SHAKING. DISPOSE OF LEAD CONTAMINATED WASH WATER IN ACCORDANCE WITH APPLICABLE FEDERAL, STATE OR LOCAL REGULATIONS.

1.17.3 Worker Information

Right-to-know notices shall be placed in clearly visible areas of the work site in compliance with Federal, state, and local regulations.

1.17.4 Air Monitoring Results

Daily air monitoring results shall be prepared so as to be easily understood by the workers, and shall be placed in a clearly visible area of the work site.

1.17.5 Emergency Telephone Numbers

A list of telephone numbers shall be posted at the site. The list shall include numbers of the local hospital, emergency squad, police and fire departments, Government and Contractor representatives who can be reached 24 hours per day, and professional consultants directly involved in the project.

1.18 EQUIPMENT AND MATERIALS

Sufficient quantities of health and safety materials required by 29 CFR 1926 Section .62, and other materials and equipment needed to complete the project, shall be available and kept on the site.

1.18.1 Respirators

Air-purifying respirators shall be approved by NIOSH for use with dust, fumes, and mists having permissible exposure limits less than 0.05 milligrams per cubic meter (i.e., have high-efficiency particulate air (HEPA) filters) and for other hazardous airborne contaminants that may be encountered, as determined by the Competent Person. Respirators shall comply with the requirements of 29 CFR 1926 Section .62 and shall be used

in accordance with 29 CFR 1926 Section .103 and 29 CFR 1910Section .134.

1.18.2 Respirator Cartridges

A sufficient supply of respirator cartridges shall be maintained at the work site to provide new cartridges to employees, authorized visitors, and Government personnel throughout the duration of the project. Cartridges shall be replaced according to the manufacturer's recommendations, when breathing becomes difficult, or if the cartridge becomes wet.

1.18.3 Protective Clothing

The Contractor shall furnish, at no cost to personnel, equipment/clothing for protection from airborne and waterborne LBP debris. An adequate supply of these items shall be available for worker, authorized visitor, and Government personnel use. Workers and visitors shall not take protective clothing and equipment off the work site at any time. Protective clothing includes:

- a. Coveralls (Whole Body Protective Coverings): Full-body coveralls and head covers shall be worn by workers in the work area. Sleeves shall be secured at the wrist and pants legs at the ankle with tape. Permeable clothing shall be provided in heat-stress conditions. Where non-disposable coveralls are provided, these coveralls shall be cleaned after each wearing. Cleaning of coveralls and other non-disposable clothing shall be in accordance with the provisions for cleaning in 29 CFR 1926 Section .62.
- b. Boots: Work boots with nonskid soles or impermeable work boot covers shall be worn by workers. Where required by OSHA, safety boots (steel toe or steel toe and shank) shall be worn. Paint the uppers of boots red with waterproof enamel. Do not allow boots to be removed from the work area for any reason after being contaminated with LBP debris. Dispose of boots as LBP contaminated waste at the end of the work.
- c. Gloves: Disposable work gloves shall be provided to each worker and shall be worn while the worker is in the work area. Glove material shall be appropriate for the specific chemical exposure. Gloves shall not be removed from the work area, and shall be disposed of as LBP contaminated waste at the end of the work.
- d. Hard Hats: Head protection (hard hats) shall be provided as required by OSHA and EM 385-1-1 for workers and authorized visitors. Protective plastic strap suspension hats shall be used. Hard hats shall be worn at all times that work is in progress. Hats shall remain in the work area until the project is completed. Hats shall be thoroughly cleaned, decontaminated, and bagged before being removed from the work area at the end of the project.
- e. Eye Protection: Fog-proof goggles for personnel engaged in LBP abatement operations shall be worn when the use of a full face piece respirator is not required.
- f. Work Clothing: Cloth work clothes shall be provided for wearing under the disposable protective coveralls and foot coverings.

1.18.4 Expendable Supplies

1.18.4.1 Polyethylene Sheet and Bags - General

Polyethylene sheet and bags shall be minimum 6 mils thick. Bags shall have pre-printed labels, and 5 inch (minimum) long plastic ties, pointed and looped to secure the filled bags. Polyethylene sheets shall be in roll sizes to minimize seams.

1.18.4.2 Tape and Adhesive Spray

Tape and adhesive shall be capable of sealing joints between polyethylene sheets and for attachment of polyethylene sheets to adjacent surfaces. After dry application, tape or adhesive shall retain adhesion when exposed to wet conditions, including amended water. Tape shall be minimum 2 inches wide, industrial strength.

1.18.4.3 Containers

Impermeable containers shall be used to receive and retain lead contaminated material until disposal. Containers shall be labeled in accordance with EPA, DOT and OSHA standards.

1.18.4.4 Chemicals

Chemicals, including caustics and paint strippers, shall be properly labeled and stored in leak-tight containers.

1.18.5 Vacuum Systems

HEPA filtered vacuum systems shall be used during abatement operations which generate dust. The systems shall be suitably sized for the project, and filters shall be capable of removing particles as small as 0.3 micrometers at a minimum efficiency of 99.97 percent.

1.19 STORAGE OF MATERIALS

Materials shall be stored in a place and manner which protects them from damage and contamination. During periods of cold weather, plastic materials shall be protected from the cold. No flammable or hazardous materials shall be stored inside any building. Regularly inspect materials to identify damaged or deteriorating items. Damaged or deteriorated items shall not be used and shall be removed from the site as soon as they are discovered. Any materials which become contaminated with LBP waste shall be disposed of consistent with the requirements of 40 CFR 148 and these specifications. Stored materials shall not present a hazard or an inconvenience to workers, visitors, and/or other occupants and employees of the building.

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION

3.1 WORK PROCEDURES

LBP abatement and related work shall be performed in accordance with the accepted Contractor's LBP Management Plan as modified and approved, following the pilot abatement project. Procedures and equipment required to limit occupational and environmental exposures to lead during LBP removal shall be in accordance with 29 CFR 1926 Section .62, and as specified herein. Paint chips and associated waste shall be disposed of in

compliance with Federal, state, and local regulations.

3.1.1 Personnel Protection Procedures

Personnel shall wear and use protective clothing and equipment as specified. Eating, smoking, drinking, chewing tobacco and chewing gum, and applying makeup shall not be permitted in the LBP control area. Personnel of trades not engaged in the abatement and disposal of LBP shall not be exposed at any time to airborne concentrations of lead equal to or in excess of 30 micrograms per cubic meter of air. Electrical service shall be disconnected when wet removal is performed, and temporary electrical service protected by a ground fault circuit interrupter shall be provided.

3.1.2 Safety and Health Procedures

The Competent Person shall be present on the work site throughout the abatement project to supervise, monitor, and document the project's health and safety provisions. A daily log shall be maintained showing the results of sampling tests throughout the project area. LBP abatement work being conducted within a LBP Control area where an airtight barrier is required shall be stopped if dust wipe concentration levels collected outside the containment area during abatement, equal or exceed the preabatement level or 200 micrograms per square foot, whichever is greater.

3.1.3 Safety and Health Responsibilities

The Competent Person shall:

- a. Verify that training meets applicable requirements.
- b. Review and approve LBP Management Plan for conformance to the applicable referenced standards.
- c. Inspect LBP removal work for conformance with the accepted LBP Management Plan.
- d. Ensure that worker exposure air monitoring activities are in accordance with 29 CFR 1926 Section .62.
- e. Ensure work is performed in strict accordance with specifications.
- f. Ensure hazardous exposure to personnel and to the environment are adequately controlled.

The CIH shall be responsible for directing personal and environmental air monitoring and lead dust wipe sampling.

3.1.4 Medical Surveillance Procedures

Medical surveillance shall be implemented in accordance with the approved Contractor's LBP Management Plan, and shall comply with the requirements of 29 CFR 1926 Section .62, including the provisions for biological monitoring, medical removal protection and a physician's written opinion, signed by the physician performing the employee examination. The Contractor shall provide a copy of the written opinion for Contractor's employees 2 days prior to each employee's commencement of work.

3.1.5 Engineering Controls and Containment Structures

3.1.5.1 LBP Control Area

The LBP control area is where LBP abatement work occurs and as such shall be considered contaminated, and shall be isolated to prevent LBP containing dust or debris from passing into adjacent building or open areas. The control area shall be decontaminated at the completion of the LBP abatement and disposal work.

3.1.5.2 Boundary Requirements

Physical boundaries shall be provided around exterior LBP control areas by roping off the area indicated in the LBP Management Plan.

3.1.5.3 Control Barriers

The LBP control area shall be separated from other portions of the building and the outside with control barriers. The polyethylene sheeting will have all openings masked and sealed, and shall be erected according to the Contractor's LBP Management Plan. Polyethylene sheeting shall be mechanically supported, independent of duct tape or spray adhesive.

3.1.5.4 Preabatement Lead-Dust Wipe Samples

Preabatement lead-dust wipe samples shall be taken outside the LBP controlled area, in accordance with HUD-01. Samples shall be taken within 10 feet of the abatement structure at 20 percent of the area planned for abatement.

3.1.5.5 Masking and Sealing

Exterior LBP control area requirements: Where the construction of a contained LBP control area is impractical, a roped-off perimeter shall be installed 20 feet from, and around, the area where the LBP handling procedures are performed and other requirements for LBP control areas shall be maintained. Personal monitoring of airborne concentrations shall be conducted in adjacent areas, during the work shift, in accordance with 29 CFR 1926 Section .62. Where wipe sampling is not practical, air monitoring outside of the roped-off perimeter shall be conducted as specified. Airborne concentrations shall not exceed specified levels.

3.1.5.6 Personnel Decontamination Area Procedures

Decontamination areas shall be provided for workers entering into or exiting the work area. The following decontamination procedures shall be strictly adhered to whenever personnel enter or leave the regulated work area: Each worker and authorized visitor, before entering the regulated area, will remove street clothing, put on the appropriate respirator and two clean, disposable protective full body coveralls and safety equipment as needed. All workers and authorized visitors will, each time they leave the work area, HEPA vacuum off their outer coverall and then peel it off, inside out. The soiled suit shall be placed into a labelled disposal bag prior to leaving the work area. Hard hats, boots, gloves, and any other contaminated materials, except for respirators, shall then be removed and stored in a safe area near the entrance to the work area until the project is completed. Workers shall then proceed to the personal decontamination area (containing an HEPA vacuum cleaner and a portable, enclosed hand/face washing facility in one chamber and a change room/street clothing storage area in a second chamber) which is located as close to the work area as practical. Inside the personal decontamination area, the inner suit shall

be removed. Finally, the respirator shall be cleaned with soap and clean water, and then dried with disposable towels. All items used for decontamination shall be disposed of as lead-contaminated waste. After decontaminating their respirators, workers shall remove their respirators. Workers shall then wash their hands and face with soap and water.

Respirator HEPA filters shall either be wetted and disposed of as lead waste or tape shall be placed over the filters for reuse.

Imminent threats of life in the work area take precedence over decontamination considerations. In any emergency involving an imminent threat to life, the injured person shall be removed from the work area in the quickest way possible. This shall be the only exception to these decontamination requirements. Emergency exit shall be provided in the work area.

3.1.5.7 Equipment or Material Decontamination Procedures

A material decontamination area consisting of a drop cloth and cleaning items. All materials, either containing or contaminated with lead, shall be properly containerized and decontaminated prior to being removed from the work area. Decontamination procedures are as follows: All materials being removed from within the work area shall be properly containerized in poly lined USDOT 17-H approved drums. Each drum shall be HEPA vacuumed and wet wiped with a trisodium phosphate detergent solution at the entrance/exit of the material decontamination station prior to being passed to the outside of the work area. A separate waste load-out station shall be constructed for the removal of materials from the work area.

3.1.5.8 Hand Wash Station Procedures

- a. An operational hand washing station shall be provided in the personal decontamination area. Workers shall wash before entering the clean changing room. Shower room shall be separated from other rooms by air tight walls fabricated from polyethylene sheeting. Water shall be hot and cold or warm. Shower heads and controls, soap dish, continuing supply of soap, and clean towels shall be provided. The shower shall be maintained in a sanitary condition. Waste water shall be pumped to drain and through waste water filters that meet state and/or local requirements. These filters shall be located inside the shower unit and filters shall be changed regularly. Spent filters shall be discarded as LBP contaminated waste.
- b. Respirator HEPA filters will either be wetted and disposed of as lead waste, or tape will be placed over the filters for reuse.
- c. Imminent threats of life in the work area take precedence over decontamination considerations. In any emergency involving an imminent threat to life, the injured person shall be removed from the work area in the quickest way possible. This will be the only exception to these decontamination requirements. Emergency exit shall be provided in this work area.

3.1.5.9 Equipment Decontamination Unit Procedures

The Equipment Decontamination Unit shall be used for removal of equipment and materials from the LBP control area, and shall include a wash room, holding room, and an enclosed walkway. The unit shall be constructed from

wood framing material and polyethylene sheeting. Workers shall not enter or exit the LBP control area through the Equipment Decontamination Unit. A washdown station, consisting of an enclosed shower unit, shall be located in the work area outside the Wash Room. The washdown station shall be used to clean equipment, bags and containers. Bagged or containerized LBP wastes shall be passed from the work area and cleaned in the Wash Room. The Wash Room shall be separated from the work area by a polyethylene sheeting flap. Wastewater shall be filtered and filters shall be changed as required for the shower unit and the Wash Room. Filters shall be disposed of as LBP contaminated wastes. The Holding Room shall be used as a drop location for bagged LBP passed from the Wash Room. This room shall be constructed so that bagged materials cannot be passed from the Wash Room through the Holding Room to the enclosed walkway. The walkway shall be separated from adjacent rooms by double flaps of 1/16 inch thick single ply rubber roofing materials of EPDM or Neoprene. The enclosed walkway shall isolate the Holding Room from the building exterior and shall be constructed of wood framing and polyethylene sheeting. The walkway shall provide access to the Holding Room from the building exterior. The enclosed walkway shall be separated from the exterior by a single flap of polyethylene sheeting.

3.1.5.10 Maintenance of Decontamination Areas

Barriers and polyethylene sheeting shall be effectively sealed and taped. Containment barriers shall be visually inspected at the beginning of each work period. Damaged barriers and defects shall be immediately repaired upon discovery. Smoke methods shall be used to test effectiveness of barriers when directed by the Contracting Officer.

3.1.5.11 LBP Control Area Exiting Procedures

Personnel exiting a LBP control area shall perform the following procedures and shall not leave the work place wearing any clothing or equipment worn during the work day:

- a. Vacuum all protective clothing before removing.
- b. Remove protective clothing in the decontamination room, and place this clothing in an approved impermeable disposal bag.
- c. Wash or shower.
- d. Change to clean clothes prior to leaving the physical boundary designated around the lead-contaminated work site.

3.1.6 Furnishings

The Government will remove furniture and equipment from the work area before LBP removal work begins.

3.1.7 Building Ventilating Systems

Any building ventilating system or any other system bringing air into or out of the LBP control work area shall be shut down and isolated by lockable switch; disconnecting wires; removing circuit breakers; or other positive means that will prevent spread of contamination through the system and accidental premature restarting of the equipment. Airtight seals shall consist of rigid covers for supply and exhaust grills and 1 layer of polyethylene. Individual seals shall be applied to ventilation openings

(supply and exhaust), windows, doorways, elevator doors, stairs, ramps, and other openings into the work area. Seals shall be maintained until project decontamination is completed. After decontamination work has been completed and final air sample testing proves that the area is decontaminated, seals shall be removed and the ventilating systems may be operated again.

3.1.8 Temporary Utilities

Temporary equipment to provide adequate power, light, heat, and water shall be installed to accomplish the abatement operations properly and safely. The Contractor shall maintain the security and maintenance of the utility system in the LBP control areas. In the event of a failure of any utility system, the Government will not be responsible for any loss of time or other expense incurred by the Contractor. In addition, the Contractor shall provide:

- a. Backflow protection on all water connections. Fittings installed by the Contractor shall be removed after completion of work with no damage or alteration to existing water piping and equipment.
- b. Heavy-duty abrasion-resistant hoses to provide water to each work area and decontamination area.
- c. A hot water heater, if hot water is not supplied through the building's existing water supply to the decontamination showers.
- d. Electrical service to work areas. Electrical service shall comply with NEMA, NECA, and UL standards. Warning signs shall be posted at power outlets which are other than 110-120 volt power. Only grounded extension cords shall be used. Incandescent lamps and light fixtures shall be of adequate wattage to provide good illumination in LBP control areas.
- e. Sufficient quantity of single-occupant, self-contained chemical toilets, properly vented and fully enclosed, if permanent toilets are not available.

3.2 LBP ABATEMENT METHODS

3.2.1 Exterior Enclosure

Peeling and deteriorating surfaces shall be wet scraped prior to repainting. All debris shall be handled in accordance with the Hazardous Waste Management Plan.

- a. Doors and windows on the side of the building upon which a dust-generating method is being used, and on the same floor and all floors below, must be closed and covered with polyethylene sheeting.
- b. The ground and any plants or shrubs in the area in which exterior abatement is occurring shall be covered with a waterproof canvas tarp and weighted at all edges to prevent blowing. Such covering shall cover from the side of the structure to a point eight feet away from the structure. The covering shall be taped or otherwise attached to the structure. The tarp shall be placed in a manner that traps all debris and water. This is best accomplished by elevating the edges. The tarp shall be properly disposed of and

not re-used.

3.3 MONITORING

During the entire LBP removal and disposal operations, an IH under the direction of a CIH shall be onsite directing the monitoring/sampling and inspecting the work to ensure that the health and safety requirements of this contract are satisfied.

3.3.1 Personal Air Monitoring

Airborne concentrations of lead shall be collected and analyzed in accordance with 29 CFR 1926 Section .62. Results shall be reported in micrograms per cubic meter of air. The Competent Person shall use personal air monitoring results to determine the effectiveness of engineering controls, the adequacy of PPE and to determine if proper work practices are being employed. The Contracting Officer shall be notified if any personal air monitoring result equals or exceeds 30 micrograms per cubic meter of air. The Contractor shall take steps to reduce the concentration of lead in the air.

3.3.2 Wipe Sampling

Wipe sampling for lead dust concentrations shall be conducted: Post abatement to determine if specified clearance criteria has been met.

3.3.2.1 Preabatement

Preabatement wipe samples shall be collected outside the LBP control area in accordance with paragraph Preabatement Lead-Dust Wipe Samples. Samples outside the LBP control work area shall be collected at critical barriers, in the clean room of the decontamination unit and in traffic control areas such as personal and equipment entrances.

3.3.2.2 Results

The Contractor shall have the results of the wipe sampling within 72 hours after the completion of the sampling. Results shall be reported in micrograms per square foot.

3.3.2.3 Excessive Levels

LBP abatement work being conducted within a LBP control area shall be stopped if measured dust wipe concentration levels collected outside the containment area, during abatement, equal or exceed the preabatement levels or 200 micrograms per square foot, whichever is greater. The Contractor shall immediately notify the Contracting Officer. At the direction of the Contracting Officer, the Contractor shall clean outside areas which equal or exceed the levels stated above, at no additional cost to the Government. The cleaning shall be in accordance with paragraph CLEANUP AND DISPOSAL, prior to clearance. The Contractor shall collect and have analyzed additional wipe samples at no charge to the Government to ensure the areas are clean. Cleaning and resampling shall continue until levels as stated above are achieved. The Contractor shall correct containment and/or work practices to mitigate the problem. Removal work shall resume when approval is given by the Contracting Officer.

3.3.2.4 Post Abatement

Post abatement samples shall be collected in accordance with paragraph Final Clearance Testing.

3.3.3 Area Air Monitoring

Airborne concentrations of lead shall be collected and analyzed in accordance with 29 CFR 1926 Section .62. Results shall be reported in micrograms per cubic meter of air.

3.3.3.1 Preabatement

Preabatement samples shall be collected in the following locations outside the work area; one upwind of the abatement and two downwind of the abatement activities.

3.3.3.2 Abatement

The IH under the direction of a CIH shall collect area air samples on a daily basis. The samples shall be collected in the same location as the preabatement samples.

3.3.3.3 Results

The Contractor shall have the results of the area air monitoring within 48 hours after completion of the sampling. Results shall be reported in micrograms per cubic meter of air.

3.3.3.4 Excessive Levels

Outdoor LBP abatement shall cease and the Contracting Officer notified if measured airborne lead concentrations, collected during abatement, exceed the preabatement airborne concentration levels. The Contractor may be required to clean and resample the effected area, at no additional cost to the Government, if directed by the Contracting Officer. The Contractor shall correct the work practices and/or engineering controls and shall resume abatement at the direction of the Contracting Officer.

3.3.4 Waste Sampling and Testing

Sampling and testing of all waste shall be in accordance with 40 CFR 261.

3.4 ADJACENT AREAS

Damage to adjacent areas shall be repaired to the approval of the Contracting Officer.

3.5 CLEANUP AND DISPOSAL

3.5.1 Cleanup

3.5.1.1 Daily

Surfaces in the LBP control area shall be maintained free of accumulations of paint chips and dust. Spread of dust and debris shall be restricted; waste shall not be distributed over the work area. Dry sweep or compressed air shall not be used for cleanup. At the end of each shift, the area shall be cleaned of visible lead paint contamination by vacuuming with a HEPA filtered vacuum cleaner and wet mopping the area. LBP abatement work shall cease during the cleanup.

3.5.1.2 Prior to Clearance

Upon completion of the lead paint abatement and a satisfactory visual inspection by the Contracting Officer in a given work area, a preliminary clean-up shall be performed by the Contractor. This clean-up includes removal of any contaminated material, equipment or debris including polyethylene sheeting from the work area, except for critical barriers. The polyethylene sheeting shall be sprayed or misted with water for dust control, abatement debris removed and then the sheeting removed by folding it in upon itself. Polyethylene sheeting used for critical barriers shall remain in place until final clearance criteria. The following methodology shall be utilized during the cleanup prior to clearance.

- a. Lead-contaminated debris shall be containerized in accordance with paragraph Contaminated Waste. Waste bags shall not be overloaded, shall be securely sealed and stored in the designated area until disposal.
- b. Non-contaminated debris shall be containerized; removed from the work area and stored in the designated area until disposal in accordance with paragraph Non-Contaminated Waste.
- c. HEPA Vacuum. Vacuum all drop cloths.
- d. Wet Wipe. Wipe the drop cloths. Contractor shall utilize a tri-sodium phosphate (TSP) detergent solution or other equally effective cleaning agent and allow surface to dry.
- e. Cleaning Equipment. The Contractor shall prepare and use detergents containing five to ten percent TSP or other equally effective cleaning agent which shall be used in accordance with the manufacturers instructions. The waste water from cleaning shall be contained and disposed of according to applicable Federal, state, county and local regulations and guidelines. The waste water shall not be disposed of in storm sewers or sanitary sewers without specific and written Government approval.

3.5.2 Visual Inspection

Upon completion of the final cleaning, the Contractor shall notify the Contracting Officer and request a final visual inspection with the Contracting Officer's representative with the criteria in the final cleaning/visual inspection example format sheet located at the end of this section. If the area does not pass the visual inspection, the Contractor shall reclean the area as required by paragraph CLEANUP AND DISPOSAL, at no additional expense to the Government. Final clearance testing shall not proceed until the Contracting Officer has accepted the final cleaning by the Contractor.

3.5.3 Final Clearance Testing

Final clearance surface dust sampling in accordance with HUD-01 shall be conducted after a thorough cleanup has been completed in accordance with the following: Exterior abatement. At least one wipe sample shall be taken on a horizontal surface in part of the living area such as a front porch.

Retests. Should laboratory results indicate that the wipe test clearance

level is exceeded, the Contractor shall reclean the affected area, at no additional cost to the Government. The Contractor shall utilize specified cleaning methods. Retesting will then be performed to determine if specified clearance criteria was met. The Contractor shall pay for additional testing and shall provide, at no additional cost, a recleaning of an affected area until the clearance level is achieved.

3.5.4 Certification

The Competent Person shall certify in writing that inside the LBP control area and the area external to the LBP control area met final clearance requirements.

3.5.5 Removal of Control Area

After approval of the final clearance certification, and when authorized by the Contracting Officer, the LBP control area, containment barriers, and control structures roped-off boundary and warning signs shall be removed.

3.5.6 Disposal

3.5.6.1 Toxicity Characteristic Leaching Procedure (TCLP) Results

The results of the TCLP analysis performed during abatement shall be used to determine disposal procedures.

3.5.6.2 Contaminated Waste

Lead-contaminated waste, scrap, and debris shall be disposed of as follows:

- a. Lead-contaminated waste, scrap, debris, bags, containers, equipment, and lead-contaminated clothing, which may produce airborne concentrations of lead particles shall be stored in U.S. Department of Transportation 49 CFR 178 approved 55 gallon drums. Each drum shall be labeled to identify the type of waste as defined in 49 CFR 172 and the date lead-contaminated wastes were first put into the drum. The Uniform Hazardous Waste Manifest forms from Federal and state agencies shall be obtained and completed. Land disposal restriction notifications shall be as required by 40 CFR 268. The Contracting Officer shall be notified at least 14 days prior to delivery to arrange for job site inspection of the drums and manifests. Lot deliveries of hazardous wastes shall be made as needed to ensure that drums do not remain on the work site longer than 90 calendar days from the date affixed to each drum. The Contracting Officer will assign an area for interim storage of waste-containing drums.
- b. Lead-contaminated waste shall be handled, stored, transported, and disposed of in accordance with 40 CFR 260, 40 CFR 261, 40 CFR 262, 40 CFR 263, 40 CFR 264, and 40 CFR 265. Land disposal restriction notification shall be as required by 40 CFR 268.

3.5.6.3 Non-Contaminated Waste

Non-contaminated waste, scrap, and debris shall be disposed of at the local landfill.

3.5.7 Disposal Documentation

Written evidence shall be provided that the hazardous waste treatment, storage, or disposal facility is approved for lead disposal by the EPA and state or local regulatory agencies. One copy shall be submitted of the completed manifest; signed, and dated by the initial transporter in accordance with 40 CFR 262.

3.5.8 Title to Materials

Materials resulting from demolition work, except as specified otherwise, shall become the property of the Contractor, and shall be disposed of in accordance with Section 02220 DEMOLITION, except as specified herein.

3.5.9 Payment for Hazardous Waste

Payment for disposal of hazardous waste will not be made until a signed copy of the manifest from the treatment or disposal facility certifying the amount of lead-containing materials delivered is returned and a copy is furnished to the Government.

CERTIFICATION OF FINAL CLEANING AND VISUAL INSPECTION

Individual abatement task as identified in paragraph,
Description of Work_____

In accordance with the clearing and decontamination procedures specified in the Contractor's lead hazard abatement plan and this contract, the Contractor hereby certifies that he/she has thoroughly visually inspected the decontaminated regulated work area (all surfaces, including pipes, beams, ledges, walls, ceiling, floor, decontamination unit, etc.) and has found no dust, debris, or lead containing material residue.

BY: (Contractor's signature)_____ Date_____

Print name and title_____

(Contractor's Onsite Supervisor signature)_____ Date_____

Print name and title_____

(Contractor's CIH or IH signature)_____ Date_____

Print name and title_____

CONTRACTING OFFICER ACCEPTANCE OR REJECTION

The Contracting Officer hereby determines that the Contractor has performed final cleaning and visual inspection of the decontaminated regulated work area (all surfaces including pipes, beams, ledges, walls, ceiling, floor, decontamination unit, etc.) and by quality assurance inspection, finds the Contractor's final cleaning to be:

____ Acceptable

____ Unacceptable, Contractor instructed to reclean the LBP control work area

BY: Contracting Officer's Representative

Signature_____ Date_____

Print name and title_____

-- End of Section --

**LEAD-BASED PAINT SURVEY
EXTERIOR PAINT PROJECT
SCHOFIELD BARRACKS, HOUSING AREA B, B-1, D, E, F
SCHOFIELD BARRACKS, OAHU, HAWAII**

Prepared for

Family Housing Division
Directorate of Public Works
U.S. Army Garrison Hawaii
Schofield Barracks, Hawaii 96857-5013

May 2000

Prepared by

Environmental Division
Directorate of Public Works
U.S. Army Garrison Hawaii
Schofield Barracks, Hawaii 96857-5013

APVG-GWV (200-1a)

MEMORANDUM FOR RECORD

Subject: Lead-Based Paint Survey, Schofield Barracks, Housing Area B, B-1, D, E, and F,
Exterior Paint Project

1. Enclosed is a preliminary lead-based paint survey for subject above.
2. Questions pertaining to the survey can be directed to Dale Kanehisa at 656-2878 extension 1036.

Encl.

TABLE OF CONTENTS

	<u>page</u>
MEMORANDUM FOR RECORD	i
TABLE OF CONTENTS.....	ii
1.0 INTRODUCTION	1
1.1 SITE DESCRIPTION	1
2.0 PAINT INSPECTION	1
2.1 METHODOLOGY	1
2.2 PAINT CHIP SAMPLE COLLECTION	2
2.3 SOIL SAMPLE COLLECTION	3
2.4 SAMPLE ANALYSIS	3
2.5 RESULTS	3
3.0 ADDENDUM	4
APPENDIX A: LEAD-BASED PAINT SAMPLE AREA IDENTIFICATION TABLE	
APPENDIX B: PAINT CHIP SAMPLE LOCATION	
APPENDIX C: LEAD ANALYTICAL LABORATORY RESULTS	
APPENDIX D: LABORATORY AND INSPECTOR CERTIFICATES	
APPENDIX E: CHAIN OF CUSTODY FORMS	

1.0 INTRODUCTION

The Directorate of Public Works (DPW), Environmental Division, performed a preliminary survey for lead-based paint (LBP) in Schofield Barracks (SB) housing area (HA) B, B-1, D, E, and F, from May 4, 2000 through May 11, 2000 by Dale Kanehisa, Lead Risk Assessor Certificate #MEC-LRA-103098-04. The exterior of all family housing units in Schofield Barracks, HA-B, B-1, D, E, and F are scheduled for repainting. Buildings in the 100, 200, 400, 500 and 600 block areas are included in the scope of the exterior paint project. The purpose of the survey was to identify the presence of LBP in the buildings to be repainted. As requested by the U.S. Army Corps of Engineers, the LBP survey sample size was based on attaining a 95% confidence level for exterior sites in HA-B, B-1, D, E, and F.

1.1 Site Description

Schofield Barracks HA-B and B-1, also known as the General's Loop Neighborhood in the Comprehensive Neighborhood Plan (CNP) for Schofield Barracks, is a single and multi-family housing area located in the eastern end of the installation. There are a total of 11 single-family and 16 multi-family buildings in SB HA-B, which were all built in 1958. Schofield Barracks HA-B-1 is comprised of three single-family buildings constructed in 1918.

Housing areas D, E, and F make up the Canby Neighborhood located in the northern half of the installation. There are a total of 93 single-family buildings and one multi-family building in HA-D and E. The single-family buildings in HA-D and E were constructed in 1919. The multi-family building, unit 409, was constructed in 1957. Schofield Barracks HA-F is comprised of 36 single-family buildings, all constructed in 1932.

2.0 PAINT INSPECTION

2.1 Methodology

All the family housing units are of similar construction for their specific housing area and are subject to the same maintenance policy. Paint inspections and sampling protocol followed U.S. Housing and Urban Development (HUD) "*Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing.*" A sample size yielding a 95% confidence level was initially requested, however, according to HUD Guidelines, this level of confidence can be established

only if all exterior sites tested fall below the LBP standard of 0.5%. Initial laboratory results, which represent a sampling of at least 10% of the buildings in each housing area, showed LBP to be present, therefore further sampling was halted.

To the extent possible, vacant units were selected to minimize exposure to occupants. The remaining units were selected randomly. The units inspected by housing area are as follows:

General's Loop		Canby		
HA-B	HA-B-1	HA-D	HA-E	HA-F
100A	225	409A	502	604
105B	227	435	514	613
107B	229	444	526	614
200		445	544	619
211		447	546	637
		448		

2.2 Paint Chip Sample Collection

Walk-through inspections were conducted for all exterior painted surfaces to identify testing combinations and assess the current condition of the paint. The following testing combinations were identified for building exteriors in HA-B, B-1, D, E, and F:

HA-B	HA-B-1	HA-D	HA-E	HA-F
Walls	Walls	Walls	Walls	Walls
Eaves	Eaves	Eaves	Eaves	Eaves
Windows	Windows	Windows	Windows	Doors
Doors	Doors	Doors	Doors	Stairs
Roof fascia	Stairs	Stairs	Stairs	Lanai ceiling
Lanai walls	Railings	Railings	Railings	
Service area walls	Trim	Trim	Trim	
Storage walls	Fence			
Storage closet door	Walkway post			
Carport walls	Walkway ceiling			
Carport ceilings				

One sample of each testing combination was collected from every unit inspected. To the extent possible, inconspicuous areas were chosen for sample collection. In most cases, a 2" x 1" area was measured. Paint chip samples were scraped off the substrate into a plastic bag using a decontaminated chisel or paint scraper. Disposable latex gloves were worn to prevent contamination from the inspector's hands. All sampling tools were cleaned with alcohol wipes to prevent cross contamination with other samples. After collection, the sampled area was cleaned,

sealed with caulk, and sprayed with epoxy paint. The location, building component, substrate, paint color and paint condition were recorded in a sampling table. Sample identification numbers included the installation, unit number, and testing combination (e.g. SB-100-E1).

2.3 Soil Sample Collection

As requested by the U.S. Army Corps of Engineers, soil samples were collected for baseline soil lead levels. Composite soil samples were collected along the perimeter of each unit inspected where areas of bare soil were present. Soil samples were collected using a clean 60 cc plastic syringe. The syringe was pushed into the soil to a depth of approximately ½ inch and twisted to extract the soil from the ground. The soil sample was then removed from the syringe using the plunger. Disposable latex gloves were worn to prevent contamination from the inspector's hands. All sampling tools were cleaned to prevent cross contamination between sampling. Each composite sample was comprised of six to eight sub-samples. Soil samples will be stored at DPW, Environmental Division until completion of the repainting project, at which time a second set of composite soil samples will be collected and submitted for laboratory analysis. If laboratory results show a post-painting soil sample to contain lead levels greater than 2,000 µg/g, the first soil sample set will be submitted to the laboratory to help determine if contamination has occurred as a result of the repainting project.

2.4 Sample Analysis

Samples were packaged and shipped, along with a chain of custody document, to AMA Analytical Services, Inc., which is an AIHA accredited laboratory. A total of 172 paint chip samples were submitted for analysis. The laboratory was requested to report results in weight percentage.

2.5 Results

Laboratory results were compared with appropriate standards. In accordance with the standards set by the HUD guidelines, any paint containing 0.5% lead or greater is considered LBP. Using HUD standards, LBP was identified on the following exterior testing combinations of at least one unit in HA-B, B-1, D, E, and F:

HA-B	HA-B-1	HA-D	HA-E	HA-F
Eaves	Walls	Walls	Walls	Walls
Doors	Eaves	Eaves	Eaves	Eaves
Roof fascia	Windows	Windows	Windows	Doors
Storage walls	Doors	Doors	Doors	Stairs
Storage closet door	Trim	Railings	Railings	Lanai ceiling
Carport walls	Walkway post	Trim	Trim	
Carport ceilings	Walkway ceiling			

Complete results can be found in the lead sampling data table in Appendix A. Paint chip sample locations are shown in Appendix B. Analytical laboratory results can be found in Appendix C. Laboratory and inspector certificates can be found in Appendix D. Chain of custody forms are presented in Appendix E.

3.0 ADDENDUM

This research was supported in part by an appointment to the Postgraduate Environmental Management Participation Program at the U.S. Army Environmental Center administered by the Oak Ridge Institute for Science and Education through an interagency agreement between the U.S. Department of Energy and USAEC.

Appendix A

Lead-Based Paint Sample Area Identification Table

**LEAD SAMPLING DATA TABLE
HOUSING AREA B**

Sample Number	Sample Description	Substrate	Condition	Lead Content
SB-100A-E1	Mint green wall paint	CMU	Fair	<0.05%
SB-100A-E2	Mint green eave paint	Wood	Poor	6.23%
SB-100A-E3	Mint green window paint	Concrete	Fair	<0.05%
SB-100A-E4	Forest green door paint	Wood	Fair	4.16%
SB-100A-L1	Mint green lanai wall paint	Wood	Fair	<0.05%
SB-100A-S1	Mint green service wall paint	CMU	Intact	<0.05%
SB-100A-ST1	Mint green storage wall paint	Wood	Poor	6.79%
SB-100A-ST2	Forest green storage closet door paint	Wood	Fair	5.21%
SB-100A-C1	Mint green carport wall paint	CMU	Fair	<0.05%
SB-100A-C2	Mint green carport ceiling paint	Wood	Poor	8.36%
SB-105B-E1	Mint green wall paint	CMU	Intact	<0.05%
SB-105B-E2	Mint green eave paint	Wood	Poor	6.95%
SB-105B-E3	Mint green window paint	Concrete	Fair	<0.05%
SB-105B-E4	Forest green door paint	Wood	Intact	3.94%
SB-105B-S1	Mint green service wall paint	CMU	Fair	<0.05%
SB-105B-ST1	Mint green storage wall paint	Wood	Poor	4.02%
SB-105B-ST2	Forest green storage closet door paint	Wood	Intact	2.86%
SB-105B-C1	Mint green carport wall paint	CMU	Intact	<0.05%
SB-105B-C2	Mint green carport ceiling paint	Wood	Fair	4.92%
SB-107B-E1	Mint green wall paint	CMU	Fair	<0.05%
SB-107B-E2	Mint green eave paint	Wood	Poor	8.58%
SB-107B-E3	Mint green window paint	Concrete	Fair	<0.05%
SB-107B-E4	Forest green door paint	Wood	Fair	5.38%
SB-107B-L1	Mint green lanai wall		Fair	<0.05%
SB-107B-S1	Mint green service wall paint	CMU	Intact	<0.05%
SB-107B-ST1	Mint green storage wall paint	Wood	Poor	4.21%
SB-107B-ST2	Olive green storage closet door paint	Wood	Intact	2.99%
SB-107B-C1	Mint green carport wall paint	CMU	Intact	<0.05%
SB-107B-C2	Mint green carport ceiling paint	Wood	Poor	9.62%
SB-200-E1	Tan wall paint	CMU	Fair	0.14%
SB-200-E2	Tan eave paint	Wood	Poor	10.58%
SB-200-E3	Tan window paint	Concrete	Intact	<0.05%
SB-200-E4	Green door paint	Wood	Intact	3.60%
SB-200-E7	Green fascia paint	Wood	Fair	10.97%
SB-200-S1	Tan service wall paint	CMU	Intact	0.14%
SB-200-ST1	Tan storage wall paint	Wood	Poor	6.64%
SB-200-ST2	Green storage closet door paint	Wood	Fair	8.37%
SB-200-C1	Tan carport wall paint	CMU	Fair	0.12%
SB-200-C2	Tan carport ceiling paint	Wood	Poor	10.39%
SB-211-E1	Mint green wall paint	CMU	Fair	0.08%
SB-211-E2	Mint green eave paint	Wood	Poor	10.70%
SB-211-E3	Mint green window paint	Concrete	Intact	0.12%
SB-211-E4	Forest green door paint	Wood	Intact	<0.05%
SB-211-E7	Forest green fascia paint	Wood	Fair	10.57%
SB-211-S1	White service wall paint	CMU	Intact	<0.05%
SB-211-ST1	Mint green storage wall paint	Wood	Fair	7.53%

HOUSING AREA B (continued)

Sample Number	Sample Description	Substrate	Condition	Lead Content
SB-211-ST2	Forest green storage closet door paint	Wood	Fair	6.29%
SB-211-C1	Mint green carport wall paint	CMU	Fair	3.97%
SB-211-C2	Mint green carport ceiling paint	Wood	Poor	9.62%

Bold Face: lead-based paint (0.5% lead or greater)

'<': indicated levels fall below laboratory detection limit

CMU: concrete masonry unit

**LEAD SAMPLING DATA TABLE
HOUSING AREA B-1**

Sample Number	Sample Description	Substrate	Condition	Lead Content
SB-225-E1	White wall paint	Wood	Fair	35.65%
SB-225-E2	White eave paint	Wood	Fair	0.22%
SB-225-E3	Mint green window paint	Wood	Poor	0.53%
SB-225-E4	Mint green door paint	Wood	Fair	<0.05%
SB-225-E7	Mint green trim paint	Wood	Poor	26.94%
SB-225-E9	Mint green fence paint	Wood	Poor	<0.05%
SB-227-E1	White wall paint	Wood	Fair	15.37%
SB-227-E2	Mint green eave paint	Wood	Fair	3.70%
SB-227-E3	Mint green window paint	Wood	Poor	37.10%
SB-227-E4	Mint green door paint	Wood	Fair	1.79%
SB-227-E5	Red stair paint	Wood	Fair	0.09%
SB-227-E6	Red railing paint	Wood	Fair	0.08%
SB-227-E7	White trim paint	Wood	Fair	33.01%
SB-227-E10	White walkway post paint	Wood	Fair	11.18%
SB-227-E11	White walkway ceiling paint	Wood	Fair	10.98%
SB-229-E1	White wall paint	Wood	Poor	5.75%
SB-229-E2	White eave paint	Wood	Fair	1.67%
SB-229-E3	Mint green window paint	Wood	Poor	3.30%
SB-229-E4	Mint green door paint	Wood	Fair	0.06%
SB-229-E7	Mint green trim paint	Wood	Poor	24.20%
SB-229-E9	Mint green fence paint	Wood	Fair	<0.05%

Bold Face: lead-based paint (0.5% lead or greater)

'<': indicated levels fall below laboratory detection limit

CMU: concrete masonry unit

**LEAD SAMPLING DATA TABLE
HOUSING AREA D**

Sample Number	Sample Description	Substrate	Condition	Lead Content
SB-409A-E1	Tan wall paint	Wood	Fair	12.78%
SB-409A-E2	Tan eave paint	Wood	Fair	5.48%
SB-409A-E3	Tan window paint	Wood	Fair	12.72%
SB-409A-E4	Brown door paint	Wood	Fair	<0.05%
SB-409A-E5	Brown stair paint	Concrete	Poor	0.16%
SB-409A-E6	Brown railing paint	Concrete	Fair	1.74%
SB-409A-E7	Tan trim paint	Wood	Fair	14.09%
SB-435-E1	Gray wall paint	Wood	Fair	0.05%
SB-435-E2	Gray eave paint	Wood	Fair	10.42%
SB-435-E3	Gray window paint	Wood	Fair	8.05%
SB-435-E4	Green door paint	Wood	Intact	0.40%
SB-435-E5	Red stair paint	Wood	Intact	0.06%
SB-435-E6	Red railing paint	Wood	Intact	9.91%
SB-435-E7	Gray trim paint	Wood	Intact	18.70%
SB-444-E1	Tan wall paint	Wood	Fair	1.18%
SB-444-E3	Tan window paint	Wood	Fair	14.43%
SB-444-E4	Yellow door paint	Wood	Intact	0.09%
SB-444-E5	Red stair paint	Wood	Fair	<0.05%
SB-444-E6	Red railing paint	Wood	Fair	<0.05%
SB-444-E7	Tan trim paint	Wood	Fair	18.69%
SB-445-E1	Gray wall paint	Wood	Fair	5.24%
SB-445-E2	Gray eave paint	Wood	Fair	10.24%
SB-445-E3	Gray window paint	Wood	Fair	15.46%
SB-445-E4	Blue door paint	Wood	Fair	0.71%
SB-445-E5	Red stair paint	Wood	Fair	0.07%
SB-445-E6	Red railing paint	Wood	Fair	0.07%
SB-445-E7	Gray trim paint	Wood	Fair	<0.05%
SB-447-E1	Mint green wall paint	Wood	Poor	1.81%
SB-447-E2	Mint green eave paint	Wood	Fair	3.80%
SB-447-E3	Mint green window paint	Wood	Fair	9.70%
SB-447-E4	Yellow door paint	Wood	Fair	0.35%
SB-447-E5	Red stair paint	Wood	Fair	<0.05%
SB-447-E6	Red railing paint	Wood	Poor	<0.05%
SB-447-E7	Mint green trim paint	Wood	Fair	20.65%
SB-448-E1	Tan wall paint	Wood	Fair	15.59%
SB-448-E2	Tan eave paint	Wood	Fair	1.43%
SB-448-E3	Tan window paint	Wood	Fair	15.09%
SB-448-E4	Green door paint	Wood	Fair	1.23%
SB-448-E5	Red stair paint	Wood	Fair	0.16%
SB-448-E6	Red railing paint	Wood	Fair	3.23%
SB-448-E7	Tan trim paint	Wood	Fair	16.71%

Bold Face: lead-based paint (0.5% lead or greater)

'<': indicated levels fall below laboratory detection limit

**LEAD SAMPLING DATA TABLE
HOUSING AREA E**

Sample Number	Sample Description	Substrate	Condition	Lead Content
SB-502-E1	Gray wall paint	Wood	Fair	5.10%
SB-502-E2	Gray eave paint	Wood	Fair	8.86%
SB-502-E3	Gray window paint	Wood	Fair	25.29%
SB-502-E4	Green door paint	Wood	Intact	1.09%
SB-502-E5	Red stair paint	Wood	Intact	<0.05%
SB-502-E6	Red railing paint	Wood	Intact	<0.05%
SB-502-E7	Gray trim paint	Wood	Fair	25.75%
SB-514-E1	Gray wall paint	Wood	Fair	15.28%
SB-514-E2	Gray eave paint	Wood	Fair	4.61%
SB-514-E3	Gray window paint	Wood	Fair	13.50%
SB-514-E4	Green door paint	Wood	Fair	0.42%
SB-514-E5	Red stair paint	Wood	Fair	0.15%
SB-514-E6	Red railing paint	Wood	Fair	1.49%
SB-514-E7	Gray trim paint	Wood	Fair	19.04%
SB-526-E1	Mint green wall paint	Wood	Poor	18.09%
SB-526-E2	Mint green eave paint	Wood	Poor	6.00%
SB-526-E3	Mint green window paint	Wood	Fair	18.22%
SB-526-E4	Forest green door paint	Wood	Fair	0.54%
SB-526-E5	Red stair paint	Wood	Fair	<0.05%
SB-526-E6	Red railing paint	Wood	Fair	<0.05%
SB-526-E7	Mint green trim paint	Wood	Poor	17.55%
SB-544-E1	Tan wall paint	Wood	Poor	8.69%
SB-544-E2	Tan eave paint	Wood	Fair	1.11%
SB-544-E3	Tan window paint	Wood	Fair	21.43%
SB-544-E4	Red door paint	Wood	Fair	<0.05%
SB-544-E5	Red stair paint	Wood	Poor	0.15%
SB-544-E6	Red railing paint	Wood	Poor	1.19%
SB-544-E7	Tan trim paint	Wood	Fair	22.34%
SB-546-E1	Gray wall paint	Wood	Fair	18.94%
SB-546-E2	Gray eave paint	Wood	Fair	0.99%
SB-546-E3	Gray window paint	Wood	Fair	13.14%
SB-546-E4	Green door paint	Wood	Fair	2.30%
SB-546-E5	Red stair paint	Wood	Fair	<0.05%
SB-546-E6	Red railing paint	CMU	Fair	0.49%
SB-546-E7	Gray trim paint	Wood	Fair	21.54%

Bold Face: lead-based paint (0.5% lead or greater)

'<': indicated levels fall below laboratory detection limit

CMU: concrete masonry unit

**LEAD SAMPLING DATA TABLE
HOUSING AREA F**

Sample Number	Sample Description	Substrate	Condition	Lead Content
SB-604-E1	Yellow wall paint	Concrete	Fair	2.17%
SB-604-E2	Yellow eave paint	Wood	Fair	1.46%
SB-604-E4	Yellow door paint	Wood	Fair	26.10%
SB-604-E5	Red stair paint	Concrete	Fair	0.23%
SB-604-L2	Yellow lanai ceiling paint	Wood	Intact	0.58%
SB-613-E1	Gray wall paint	Concrete	Fair	3.85%
SB-613-E2	Gray eave paint	Wood	Poor	2.86%
SB-613-E4	Tan door paint	Wood	Fair	23.06%
SB-613-E5	Red stair paint	Concrete	Poor	0.10%
SB-613-L2	Lavender lanai ceiling paint	Wood	Poor	0.33%
SB-614-E1	Yellow wall paint	Concrete	Fair	1.87%
SB-614-E2	Yellow eave paint	Wood	Fair	0.84%
SB-614-E4	Lavender door paint	Wood	Fair	6.22%
SB-614-E5	Red stair paint	Concrete	Fair	<0.05%
SB-614-L2	Yellow lanai ceiling paint	Wood	Fair	1.01%
SB-619-E1	Tan wall paint	Concrete	Fair	1.62%
SB-619-E2	Tan eave paint	Wood	Fair	0.90%
SB-619-E4	Yellow door paint	Wood	Fair	21.66%
SB-619-E5	Red stair paint	Concrete	Poor	1.31%
SB-619-L2	Tan lanai ceiling paint	Wood	Poor	4.27%
SB-637-E1	Yellow wall paint	Concrete	Fair	1.86%
SB-637-E2	Yellow eave paint	Wood	Fair	<0.05%
SB-637-E4	Blue door paint	Wood	Fair	<0.05%
SB-637-E5	Red stair paint	Concrete	Fair	0.09

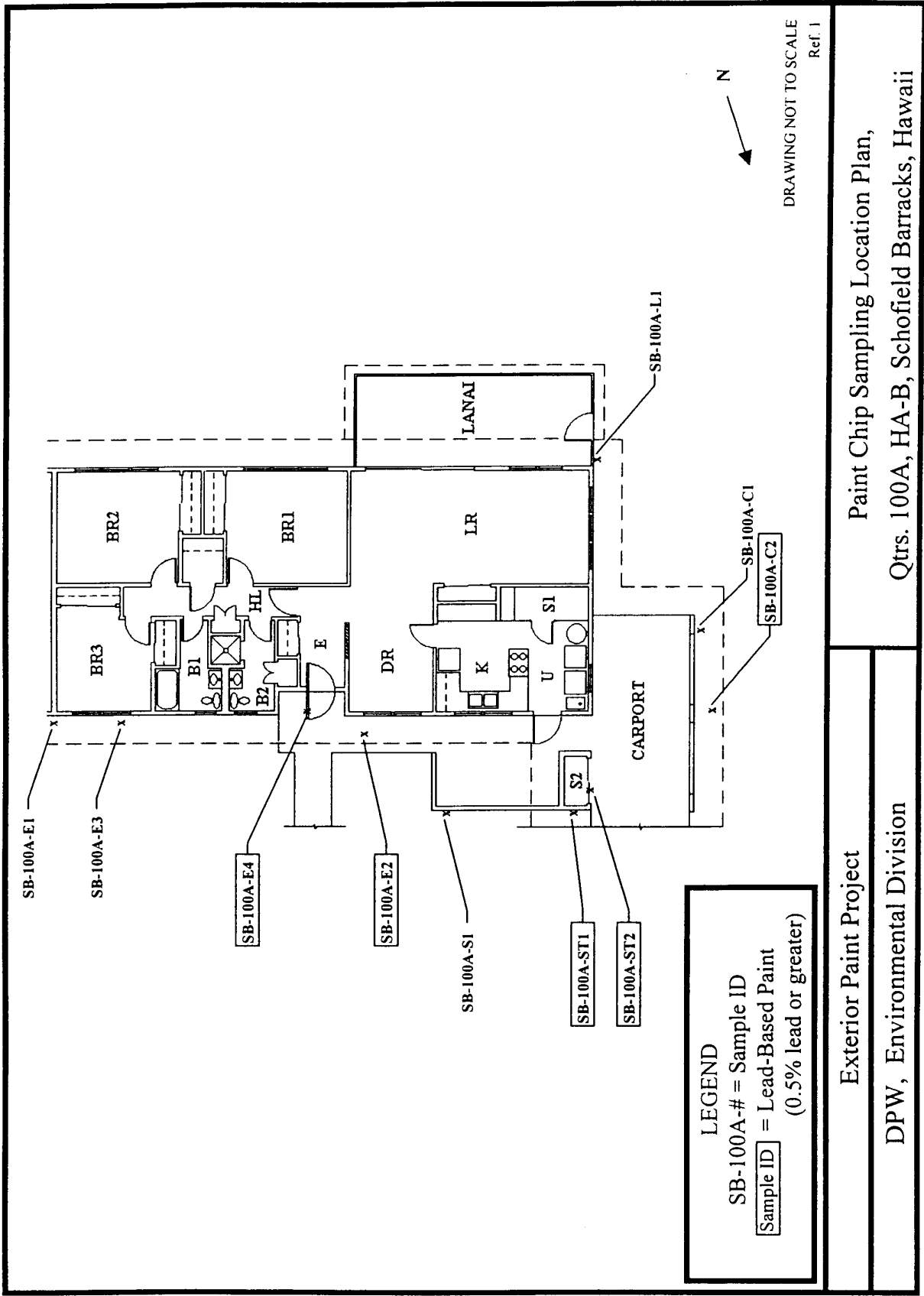
Bold Face: lead-based paint (0.5% lead or greater)

'<': indicated levels fall below laboratory detection limit

CMU: concrete masonry unit

Appendix B

Paint Chip Sample Location



LEGEND
SB-100A-# = Sample ID
[Sample ID] = Lead-Based Paint
(0.5% lead or greater)

Exterior Paint Project

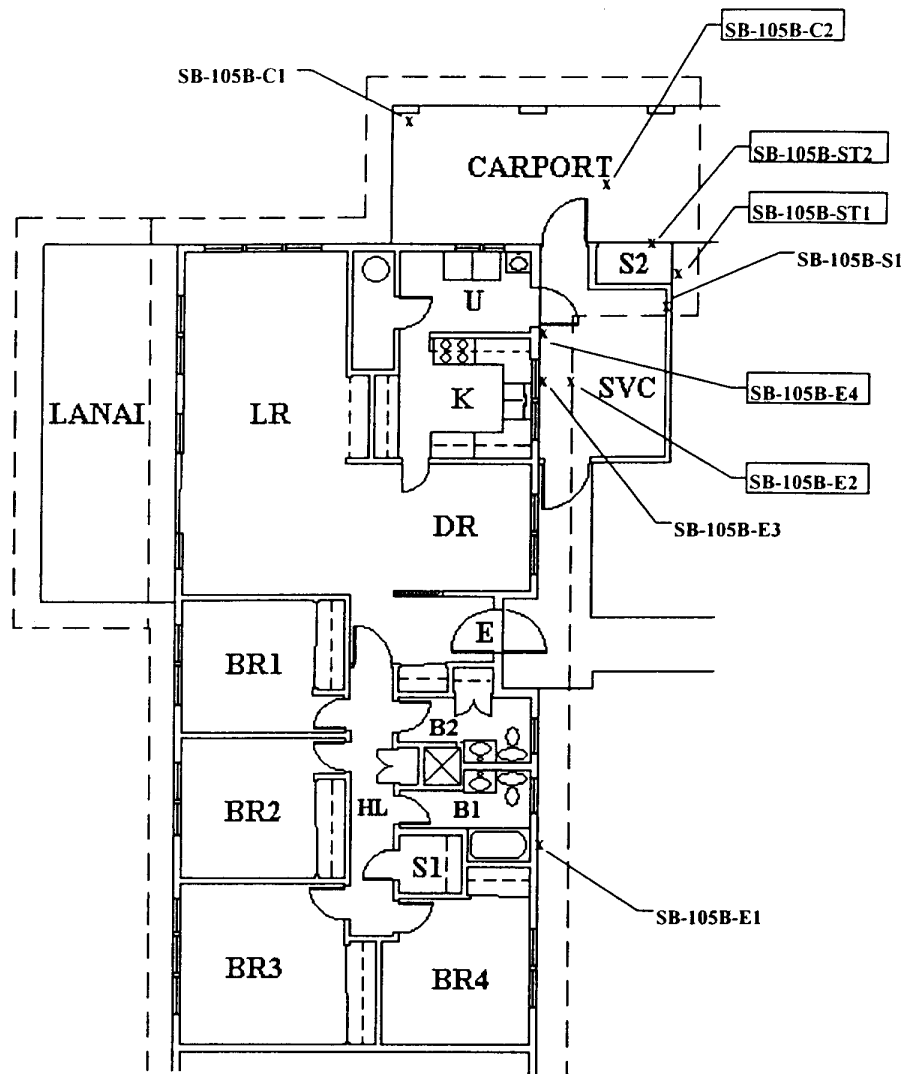
DPW, Environmental Division

Paint Chip Sampling Location Plan,

Qtrs. 100A, HA-B, Schofield Barracks, Hawaii

Mitsunaga & Associates, Inc., Comprehensive Neighborhood Plans,
Schofield Barracks, Military Housing Master Plan for Oahu

DRAWING NOT TO SCALE
Ref. 1

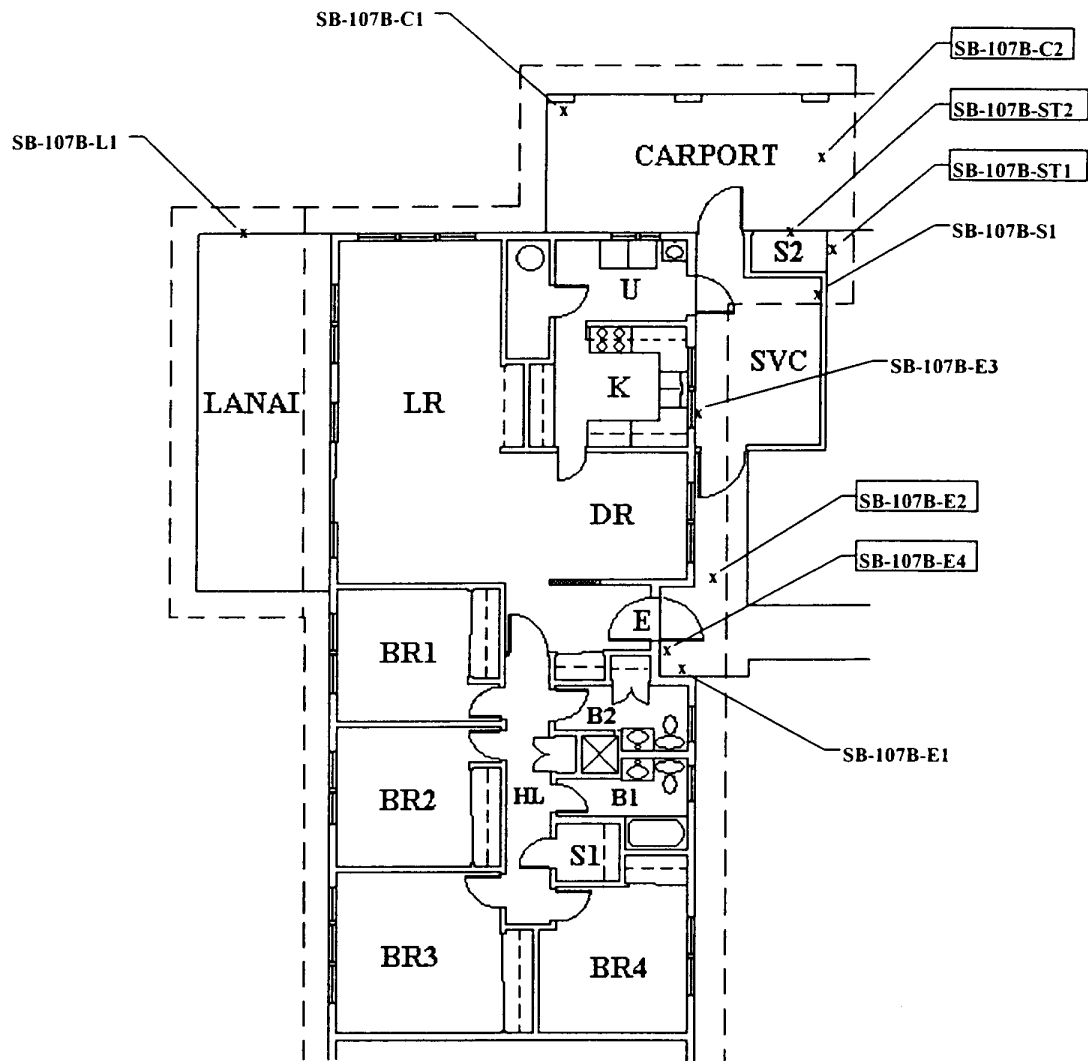


LEGEND
 SB-105B-# = Sample ID
 [Sample ID] = Lead-Based Paint
 (0.5% lead or greater)

N
 ↗
 DRAWING NOT TO SCALE
 Ref. 1

Exterior Paint Project	Paint Chip Sample Location Plan
DPW, Environmental Division	Qtrs. 105B, HA-B, Schofield Barracks, Hawaii

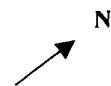
¹Mitsunaga & Associates, Inc., Comprehensive Neighborhood Plans,
 Schofield Barracks, Military Housing Master Plan for Oahu



LEGEND

SB-107B-# = Sample ID

[Sample ID] = Lead-Based Paint
(0.5% lead or greater)



DRAWING NOT TO SCALE

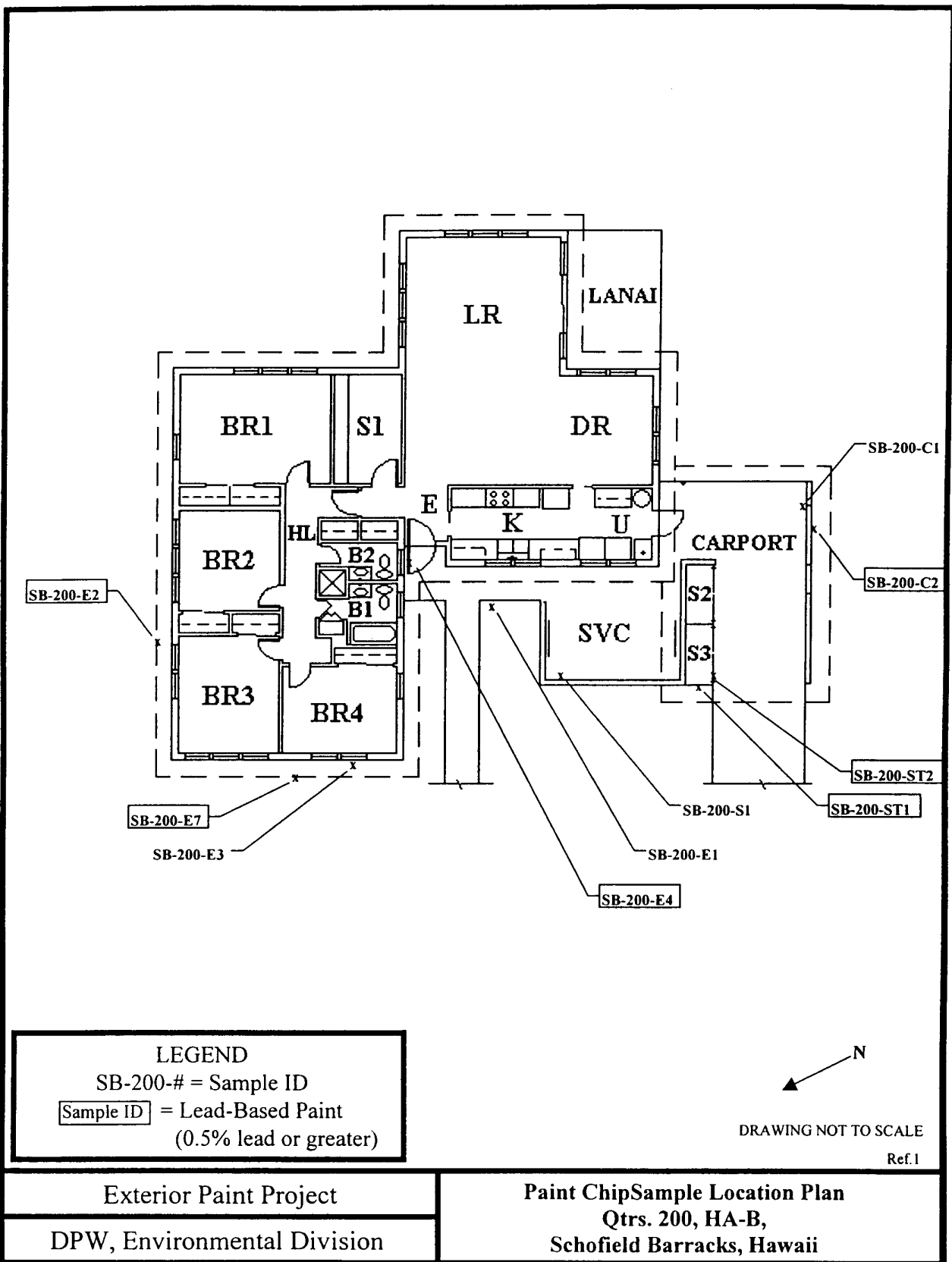
Ref. 1

Exterior Paint Project

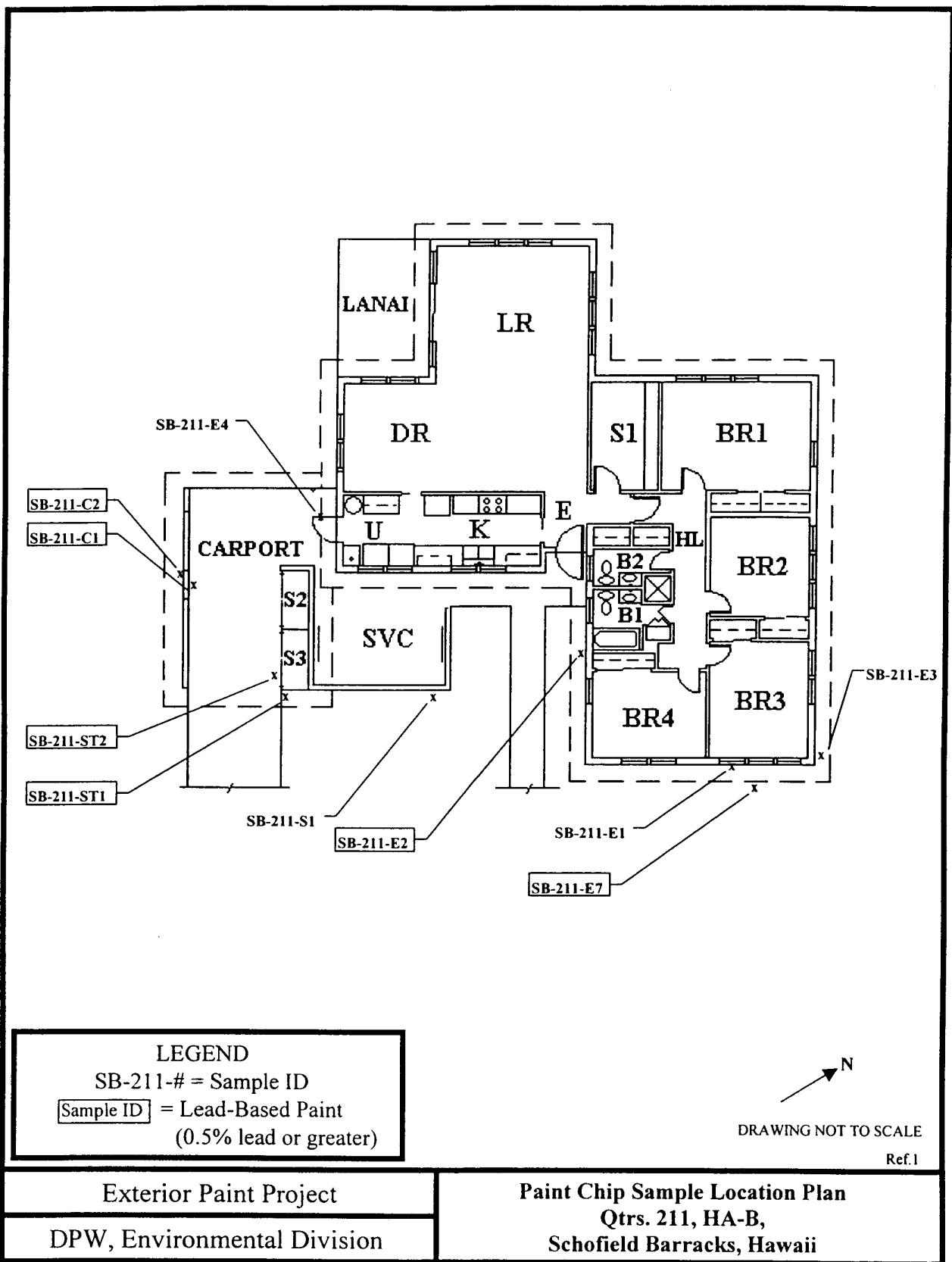
DPW, Environmental Division

Paint Chip Sample Location Plan
Qtrs. 107B, HA-B,
Schofield Barracks, Hawaii

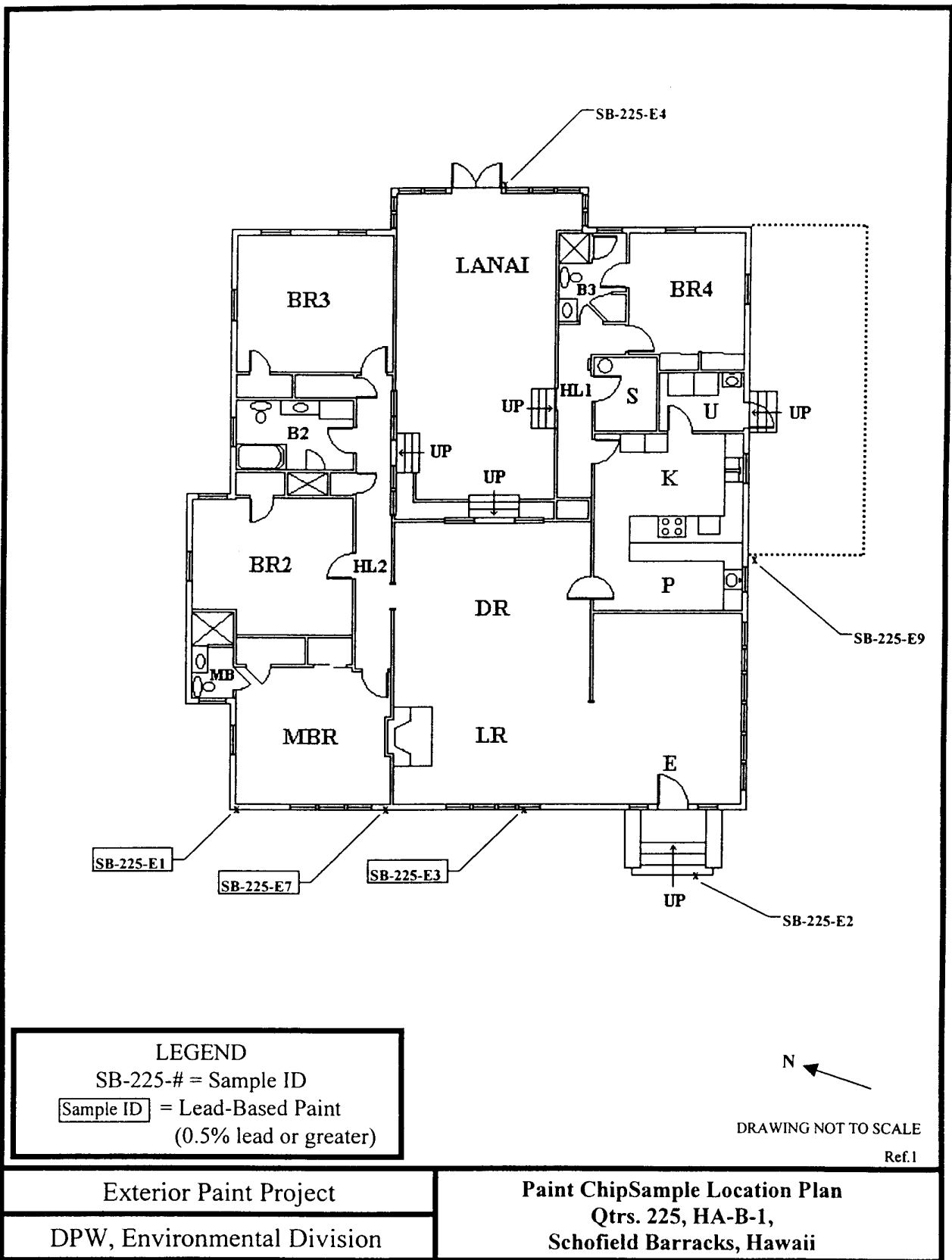
¹Mitsunaga & Associates, Inc., Comprehensive Neighborhood Plans,
Schofield Barracks, Military Housing Master Plan for Oahu



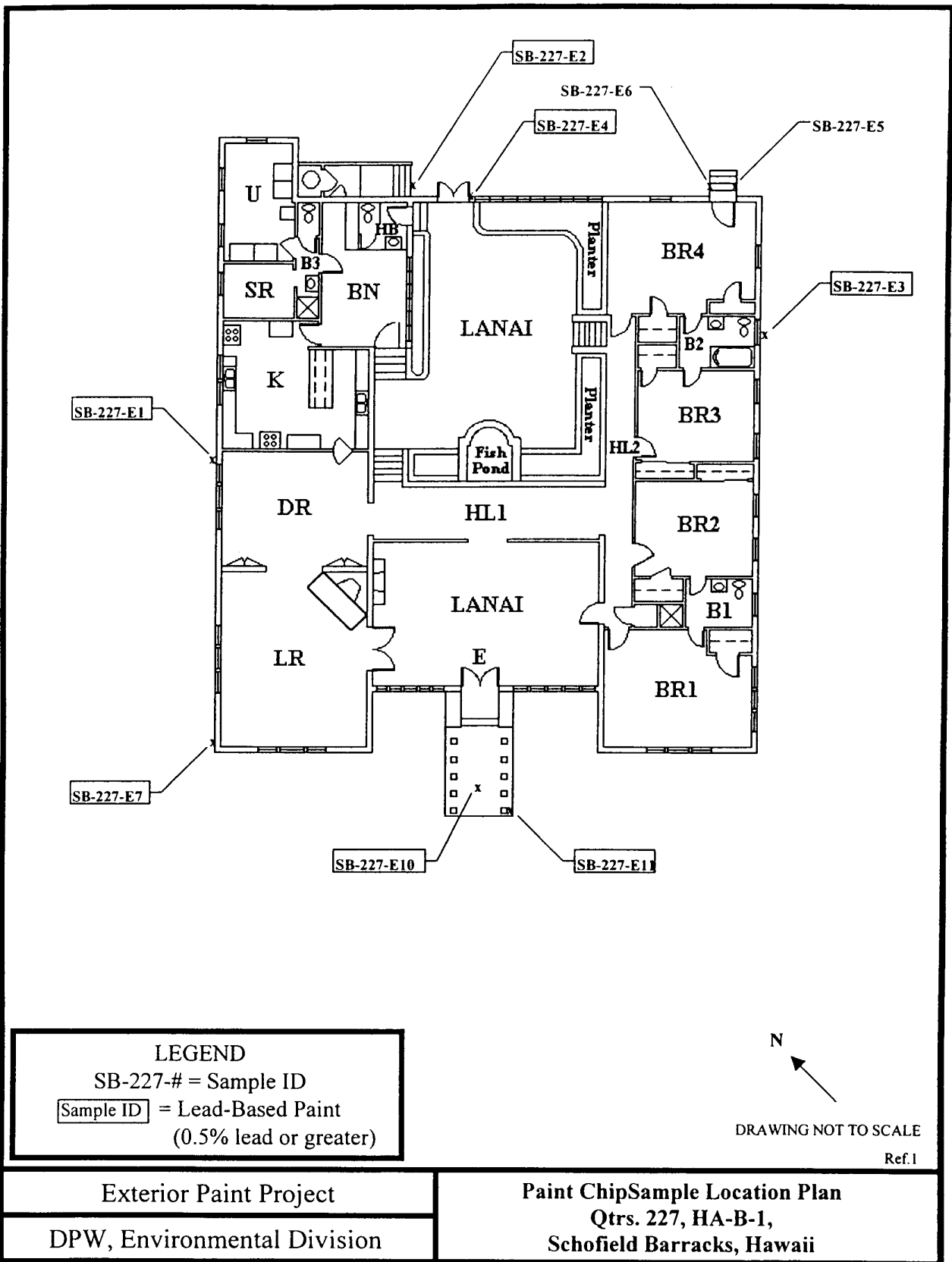
¹Mitsunaga & Associates, Inc., Comprehensive Neighborhood Plans,
 Schofield Barracks, Military Housing Master Plan for Oahu



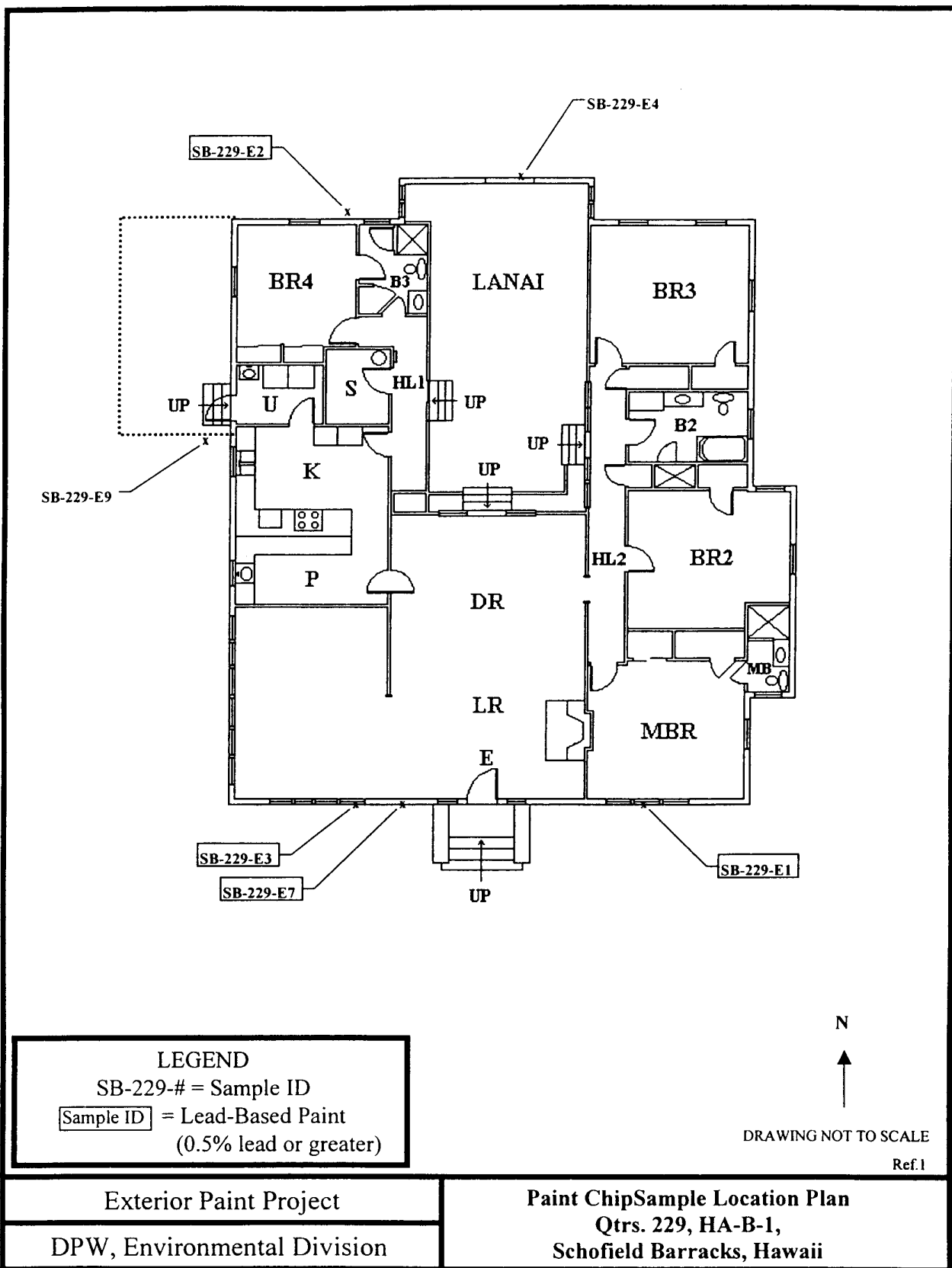
¹Mitsunaga & Associates, Inc., Comprehensive Neighborhood Plans,
 Schofield Barracks, Military Housing Master Plan for Oahu



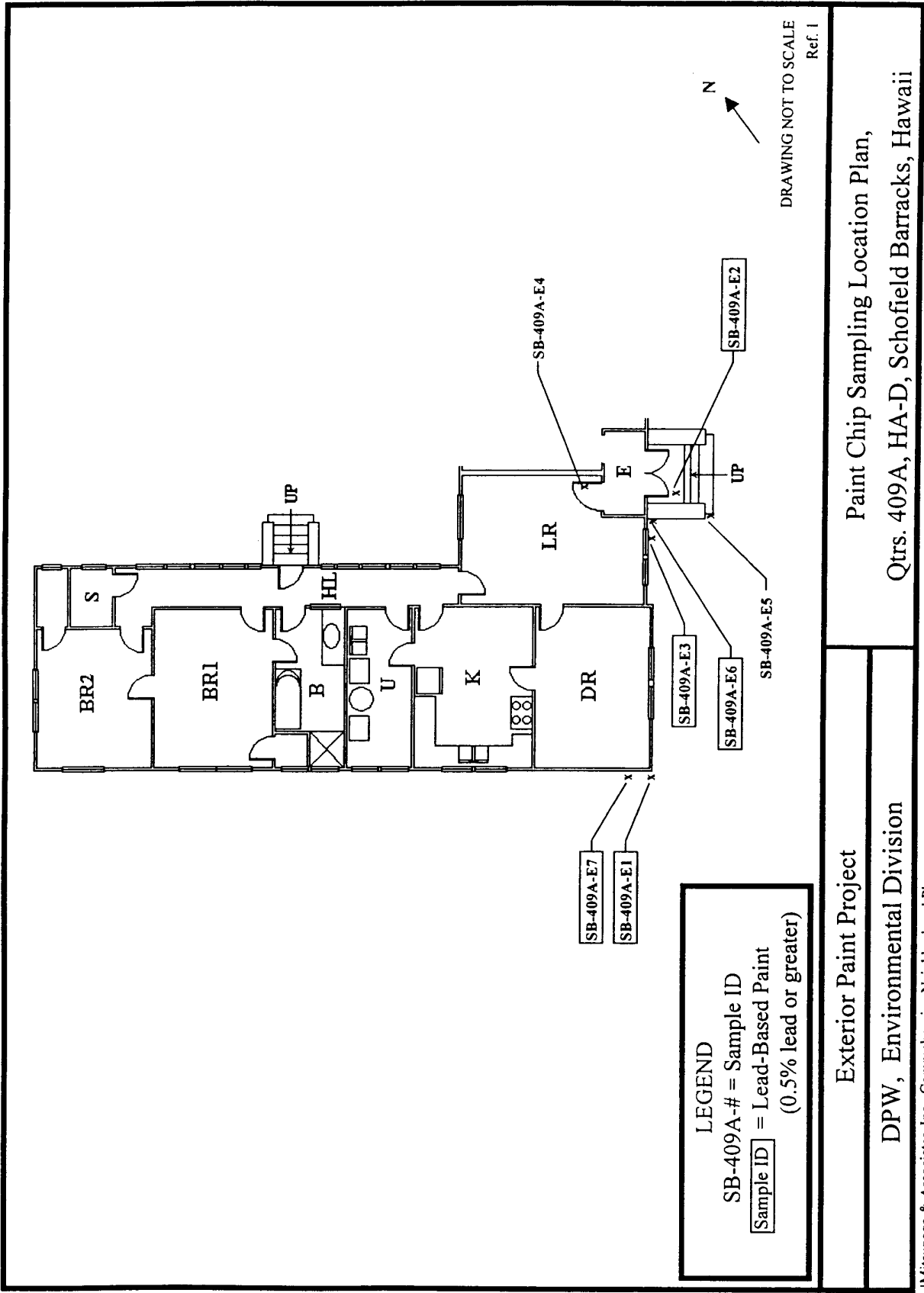
¹Mitsunaga & Associates, Inc., Comprehensive Neighborhood Plans,
 Schofield Barracks, Military Housing Master Plan for Oahu

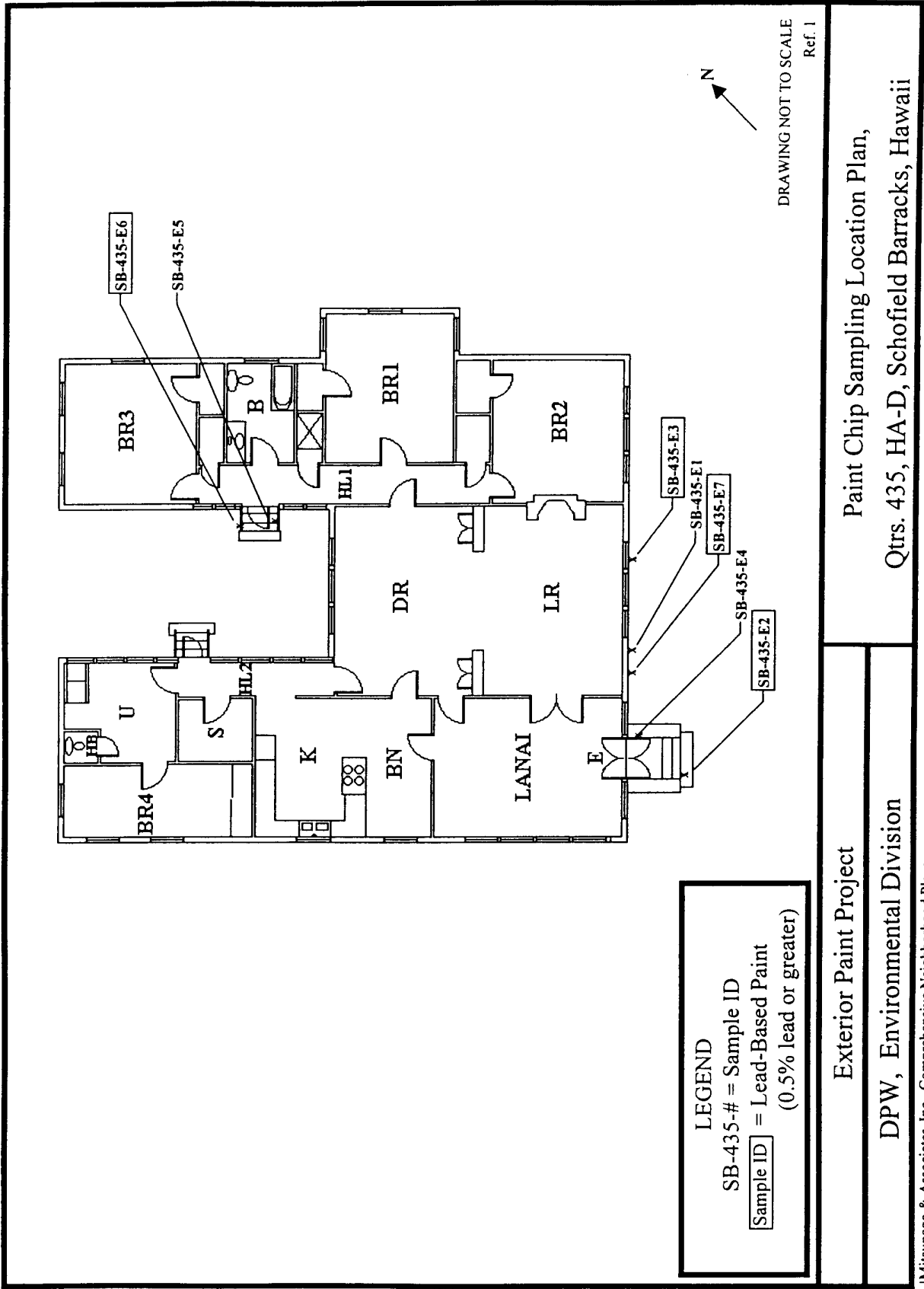


¹Mitsunaga & Associates, Inc., Comprehensive Neighborhood Plans,
 Schofield Barracks, Military Housing Master Plan for Oahu



¹Mitsunaga & Associates, Inc., Comprehensive Neighborhood Plans,
 Schofield Barracks, Military Housing Master Plan for Oahu





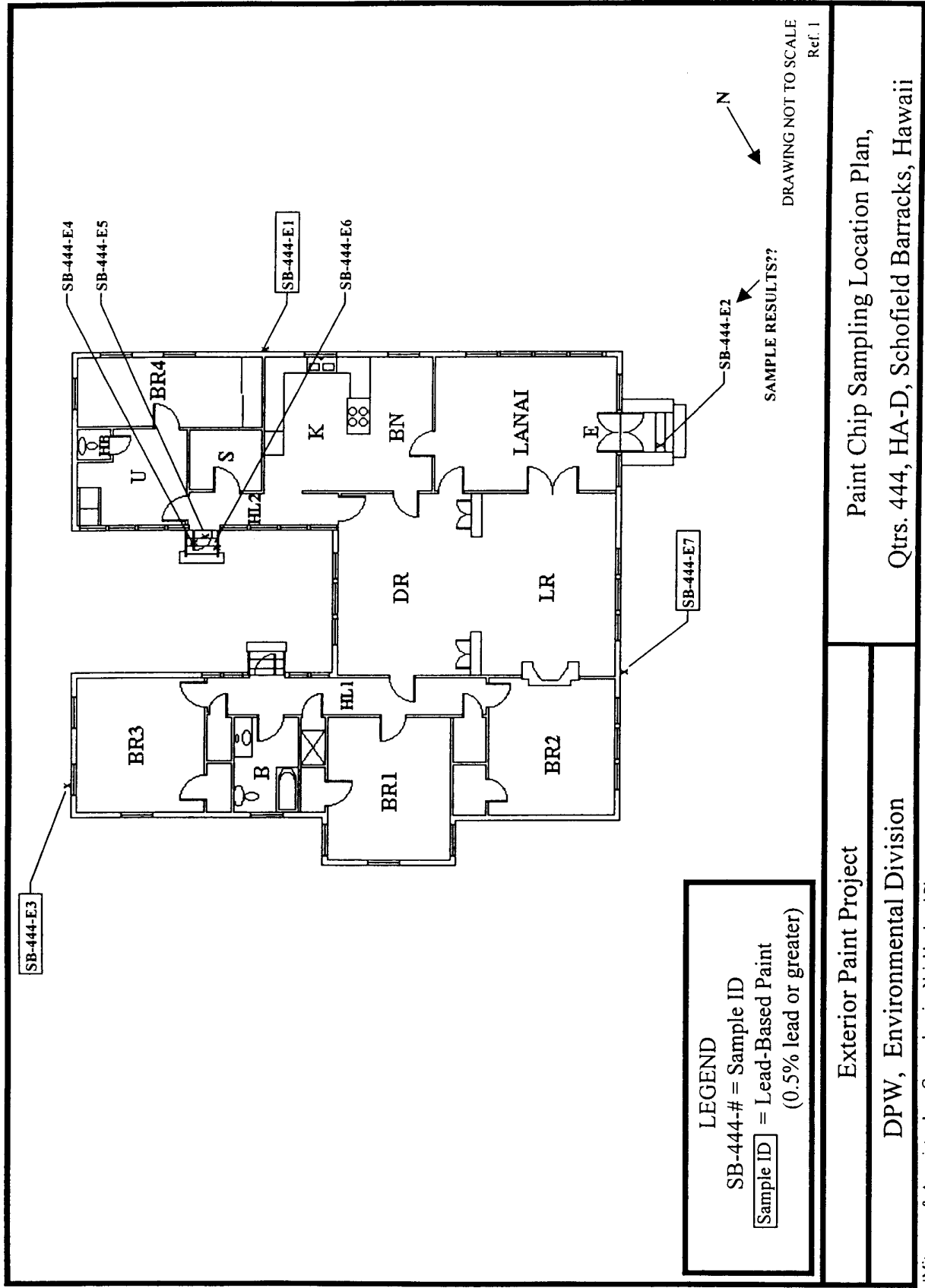
LEGEND
SB-435-# = Sample ID
[Sample ID] = Lead-Based Paint
(0.5% lead or greater)

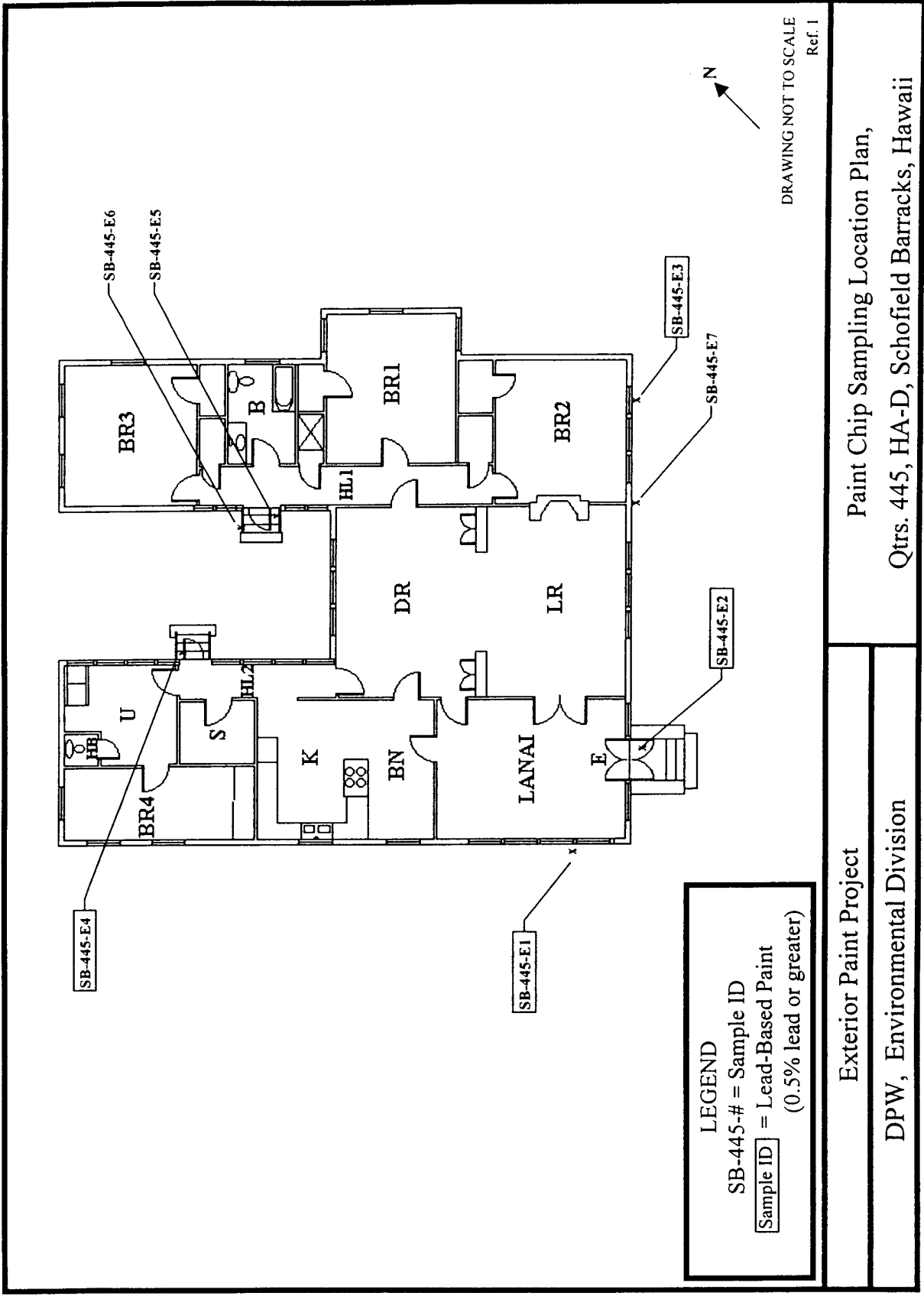
DRAWING NOT TO SCALE
Ref. 1

Exterior Paint Project

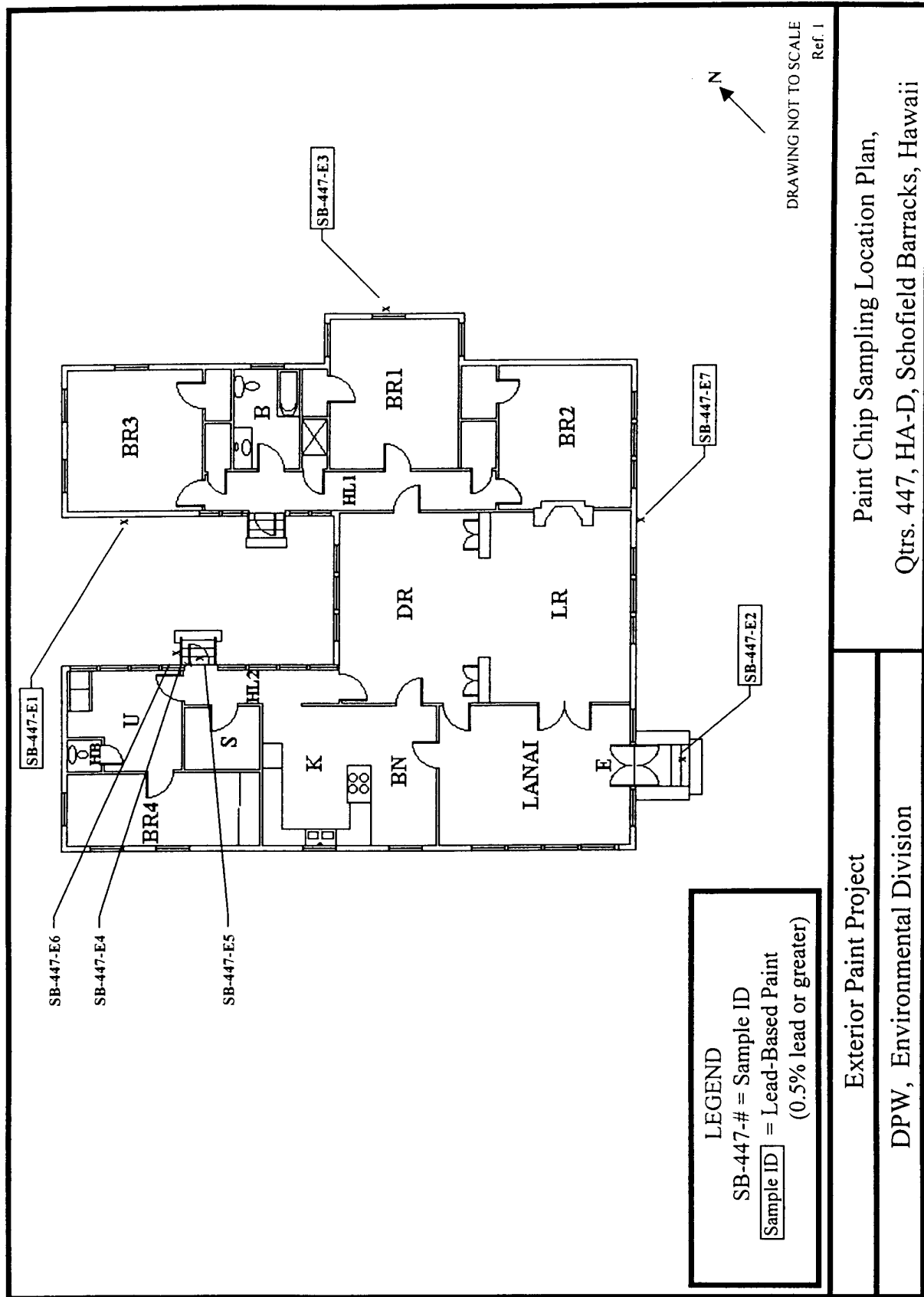
DPW, Environmental Division

Paint Chip Sampling Location Plan,
Qtrs. 435, HA-D, Schofield Barracks, Hawaii

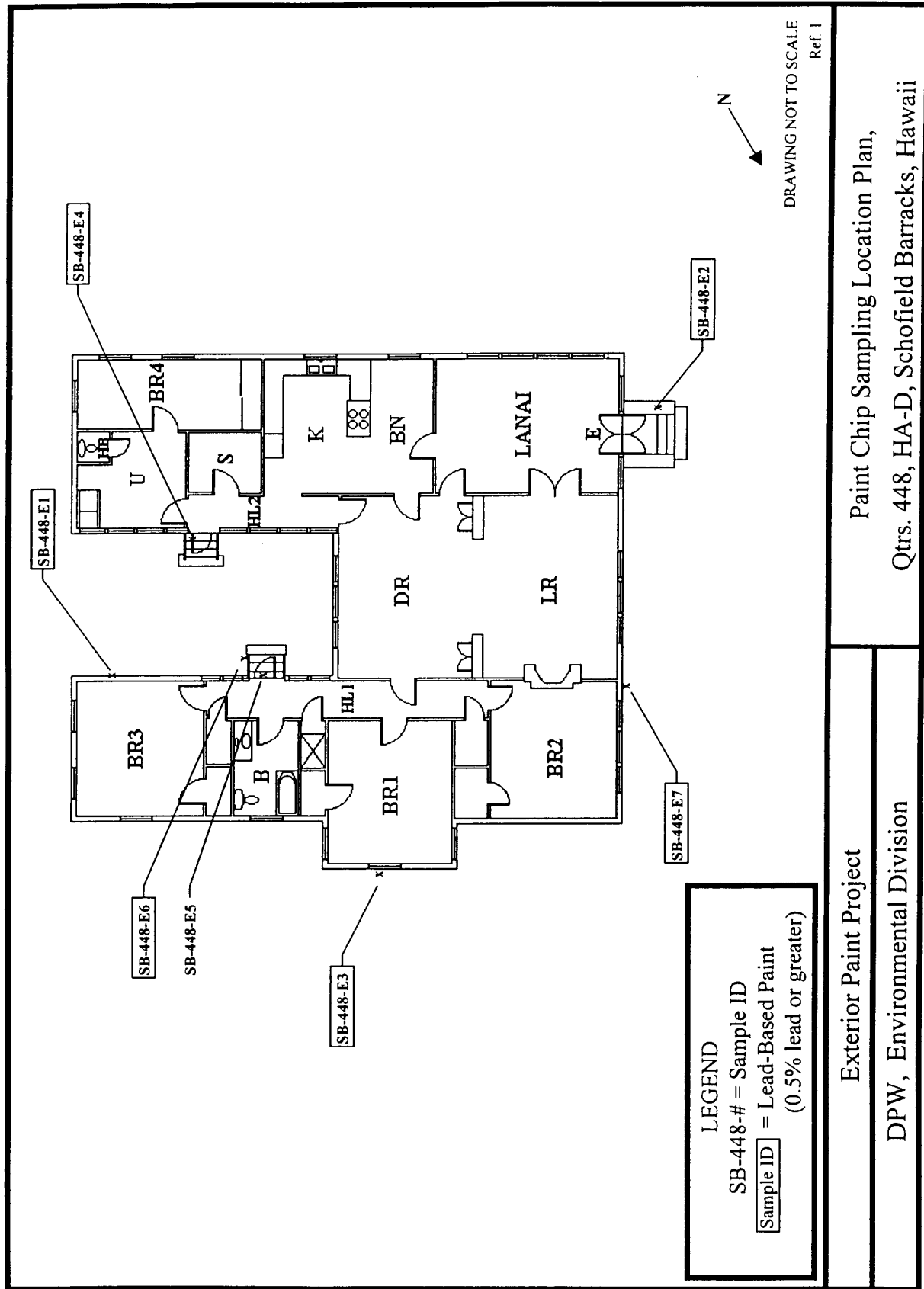




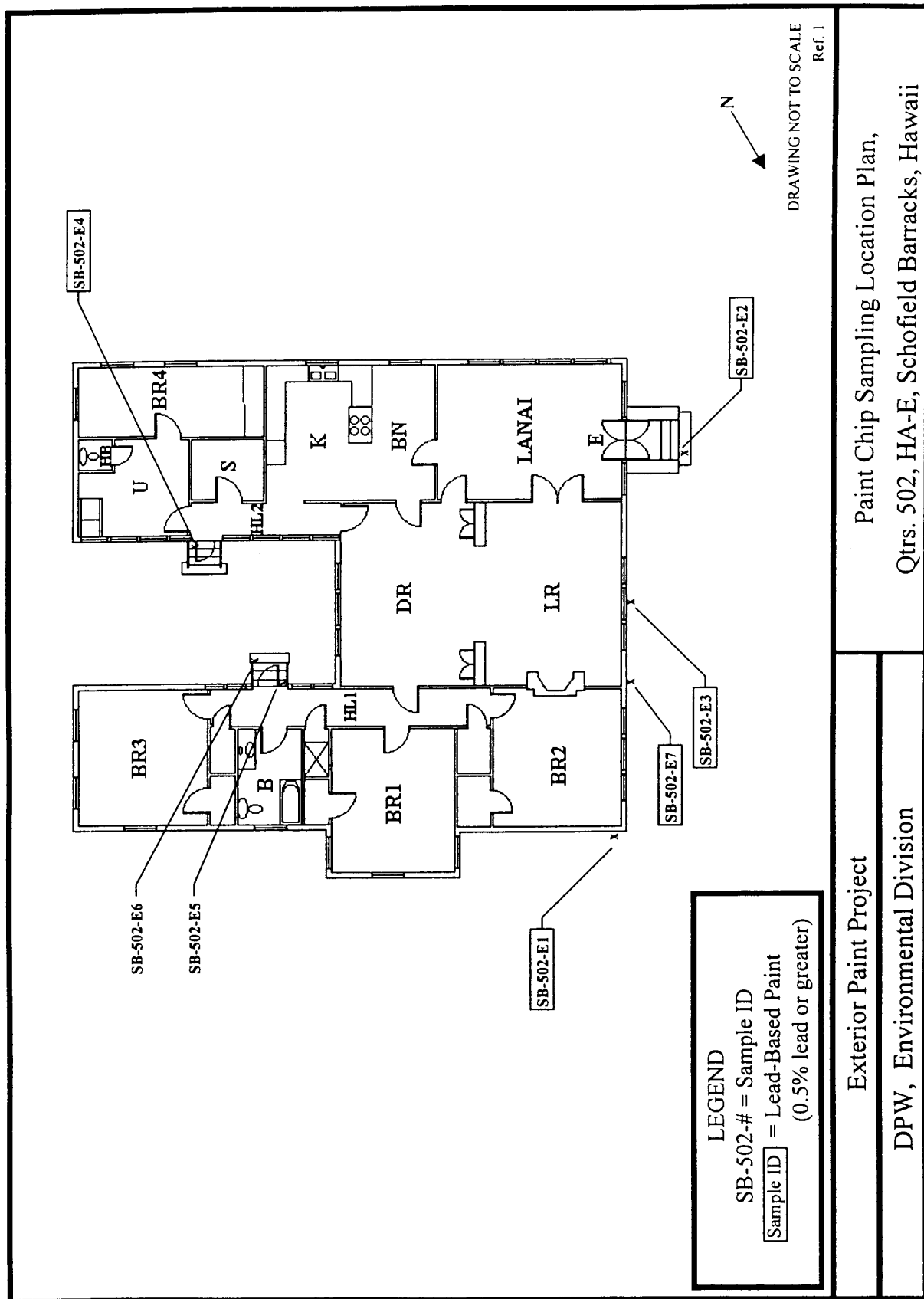
Mitsunaga & Associates, Inc., Comprehensive Neighborhood Plans,
Schofield Barracks, Military Housing Master Plan for Oahu



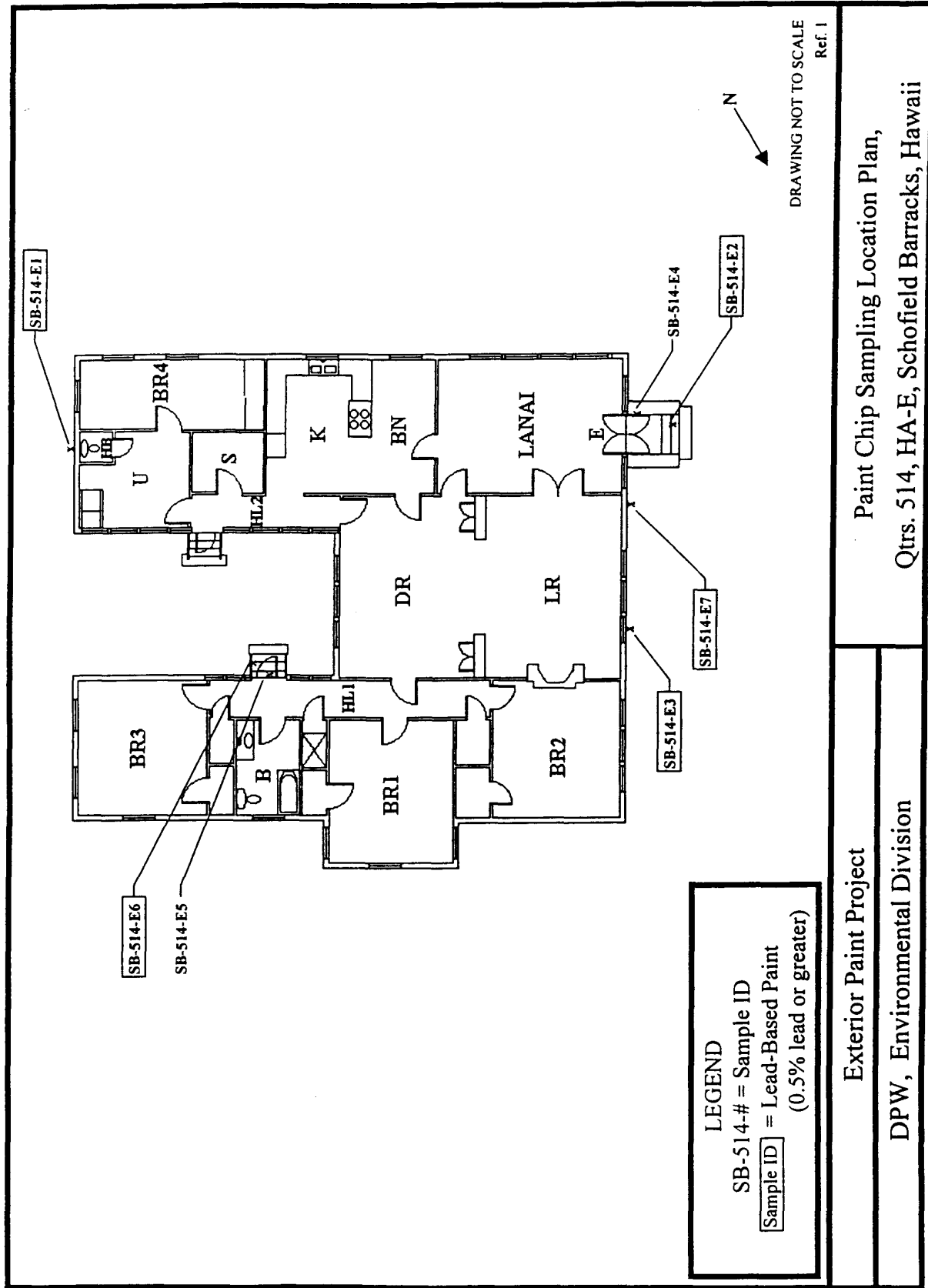
Mitsunaga & Associates, Inc., Comprehensive Neighborhood Plans,
 Schofield Barracks, Military Housing Master Plan for Oahu



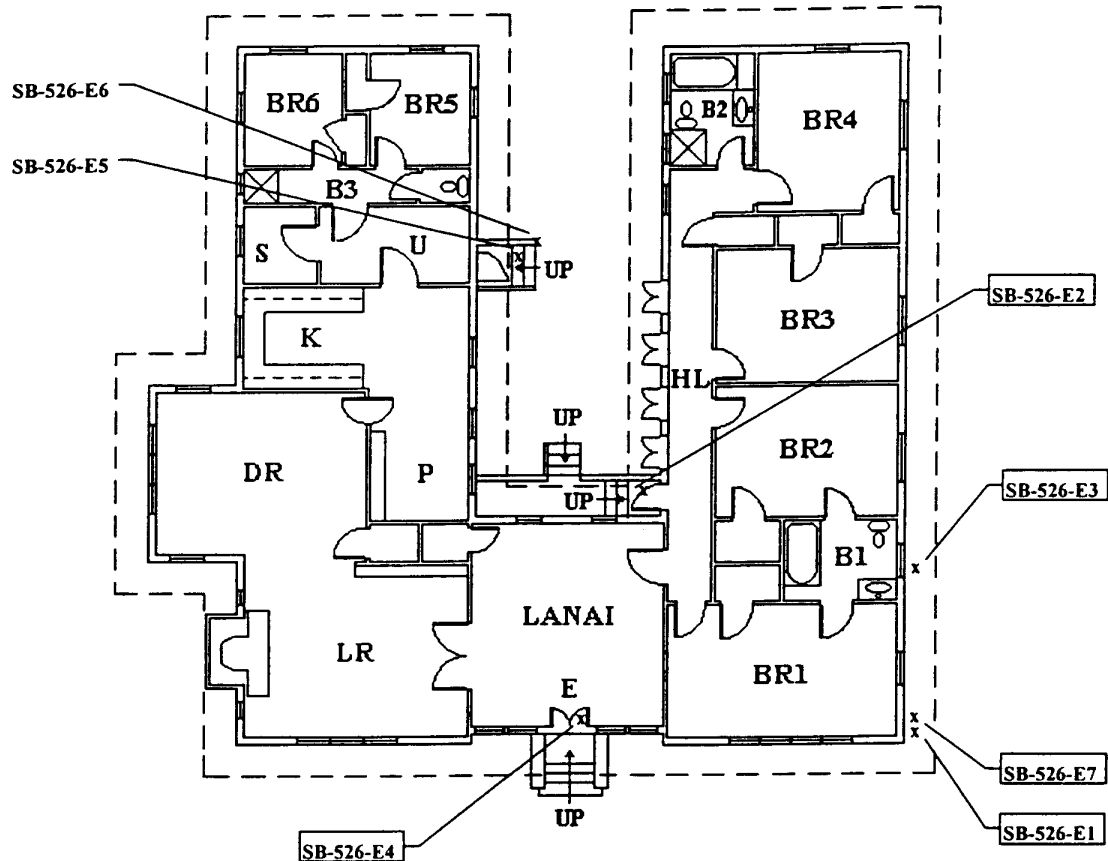
Mitsunaga & Associates, Inc., Comprehensive Neighborhood Plans,
 Schofield Barracks, Military Housing Master Plan for Oahu



Mitsunaga & Associates, Inc., Comprehensive Neighborhood Plans,
Schofield Barracks, Military Housing Master Plan for Oahu



Mitsunaga & Associates, Inc., Comprehensive Neighborhood Plans,
 Schofield Barracks, Military Housing Master Plan for Oahu



LEGEND

SB-526-# = Sample ID

Sample ID = Lead-Based Paint
(0.5% lead or greater)



DRAWING NOT TO SCALE

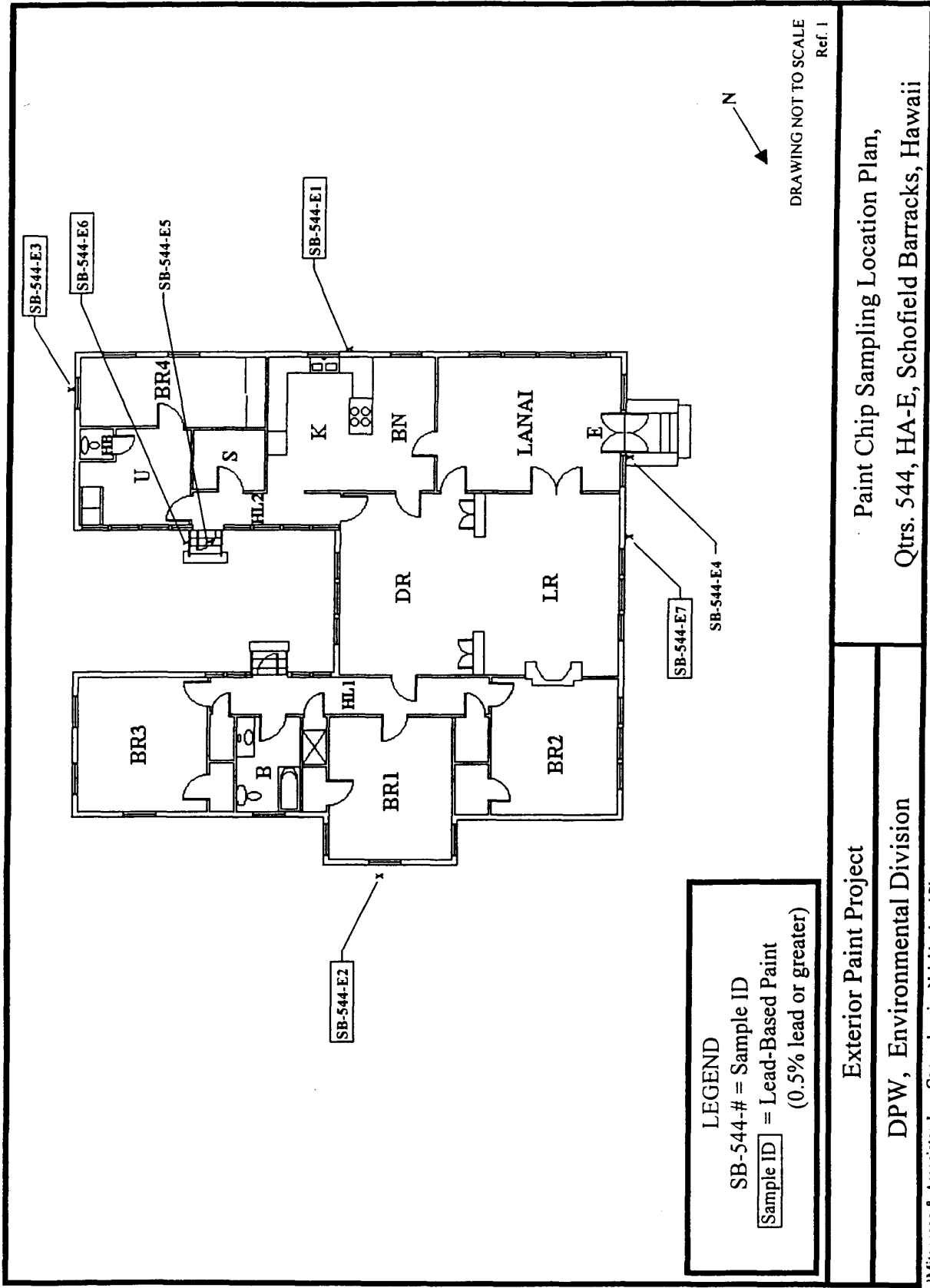
Ref. 1

Exterior Paint Project

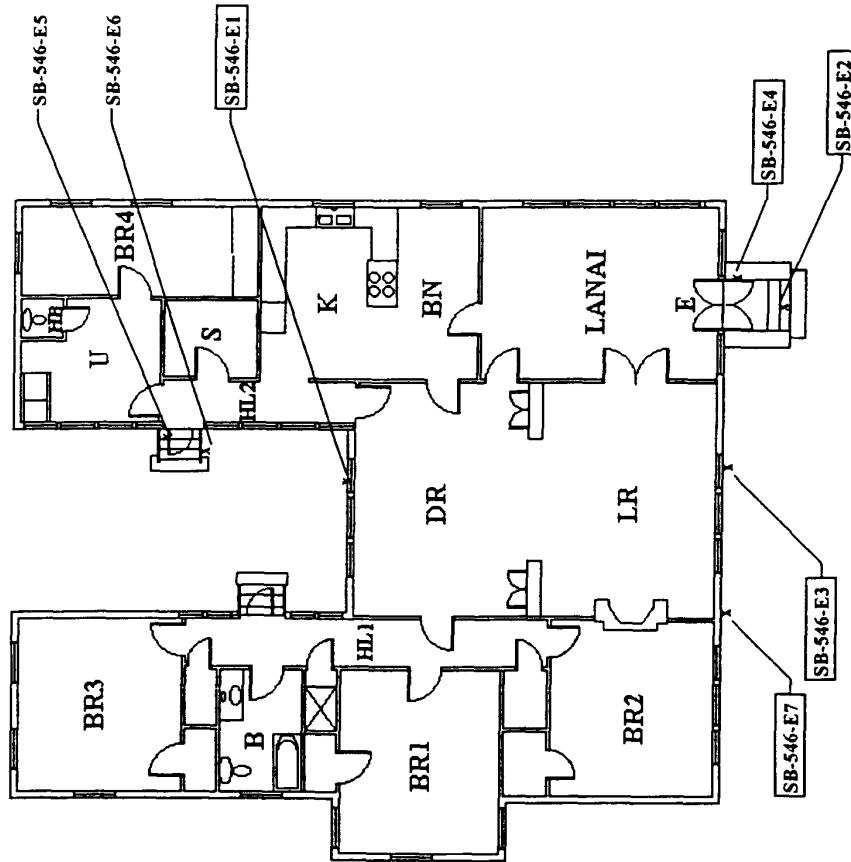
DPW, Environmental Division

Paint Chip Sample Location Plan
Qtrs. 526, HA-E,
Schofield Barracks, Hawaii

¹Mitsunaga & Associates, Inc., Comprehensive Neighborhood Plans,
Schofield Barracks, Military Housing Master Plan for Oahu



Mitsunaga & Associates, Inc.; Comprehensive Neighborhood Plans,
 Schofield Barracks, Military Housing Master Plan for Oahu

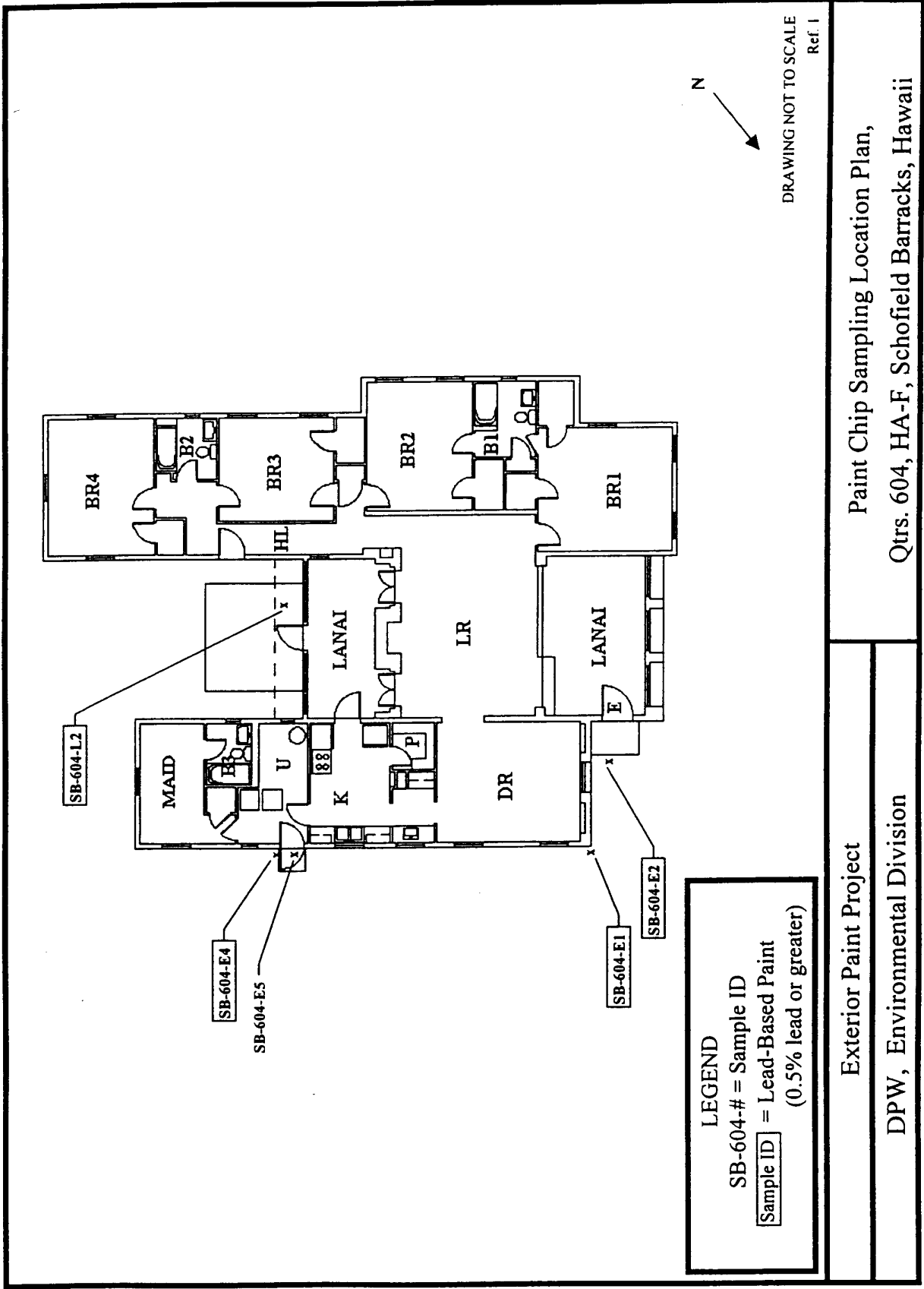


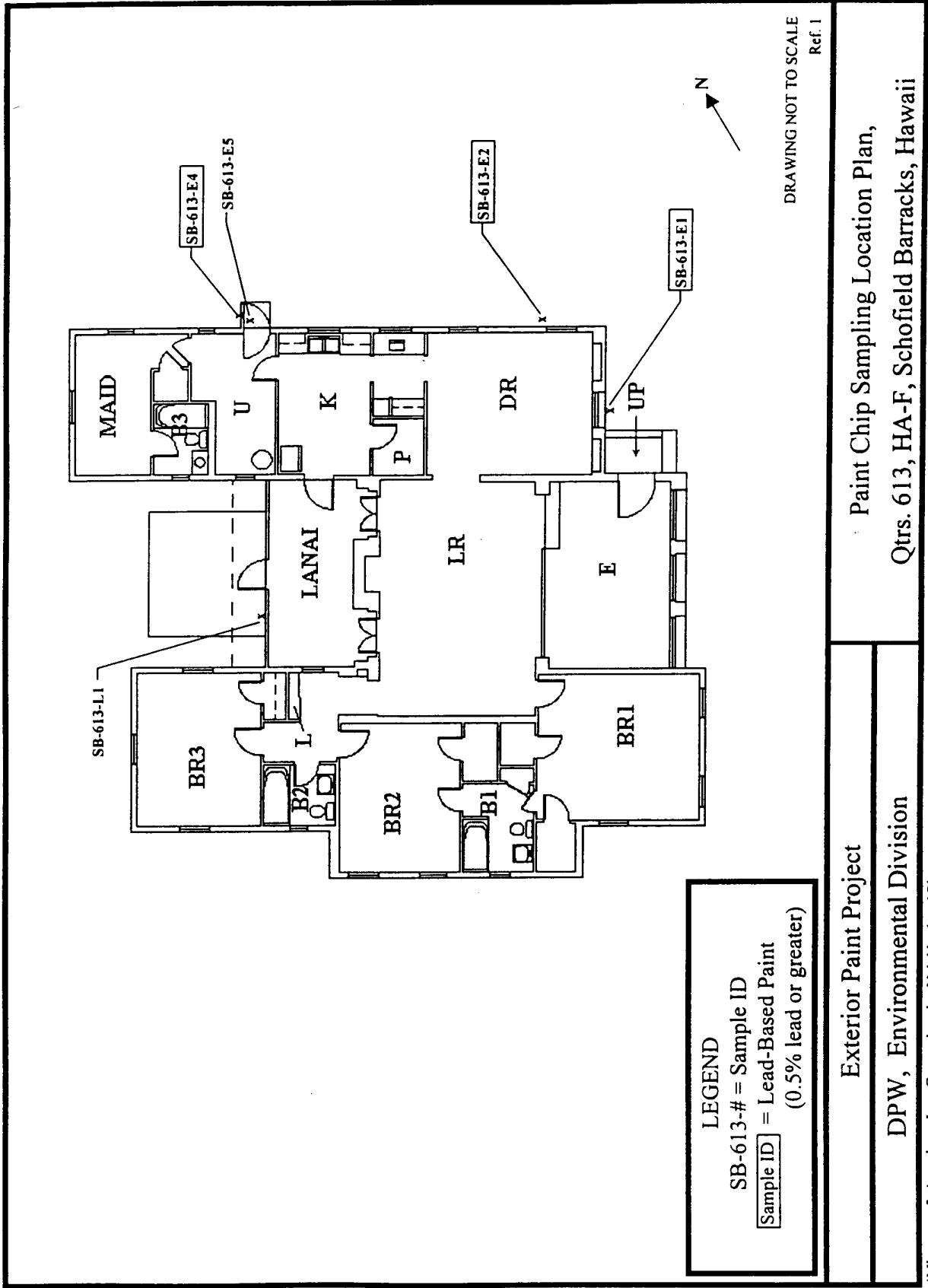
LEGEND
 SB-546-# = Sample ID
 [Sample ID] = Lead-Based Paint
 (0.5% lead or greater)

Paint Chip Sampling Location Plan, Qtrs. 546, HA-E, Schofield Barracks, Hawaii	
Exterior Paint Project	
DPW, Environmental Division	

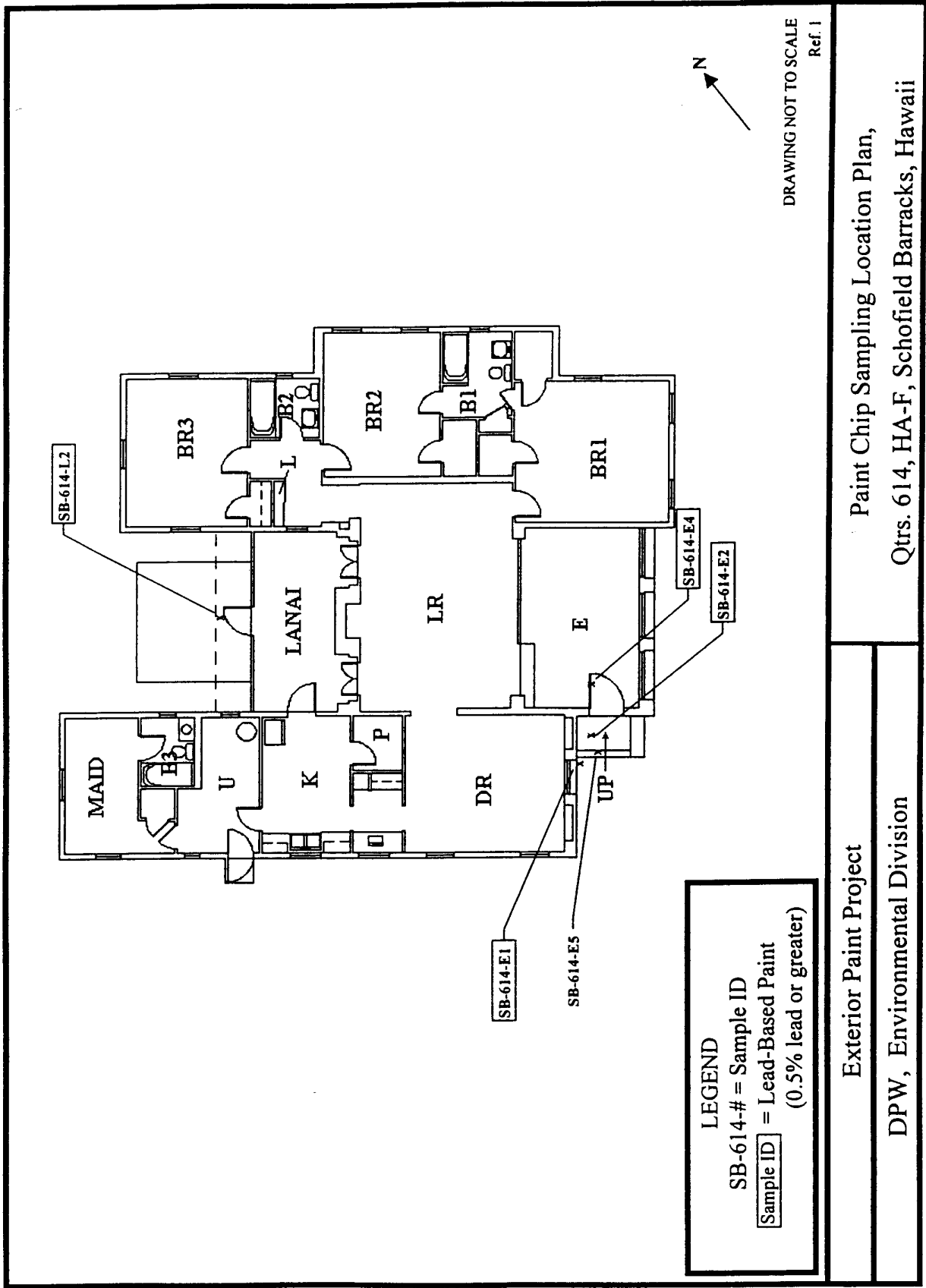
Mitsunaga & Associates, Inc., Comprehensive Neighborhood Plans,
 Schofield Barracks, Military Housing Master Plan for Oahu

DRAWING NOT TO SCALE
 Ref. 1

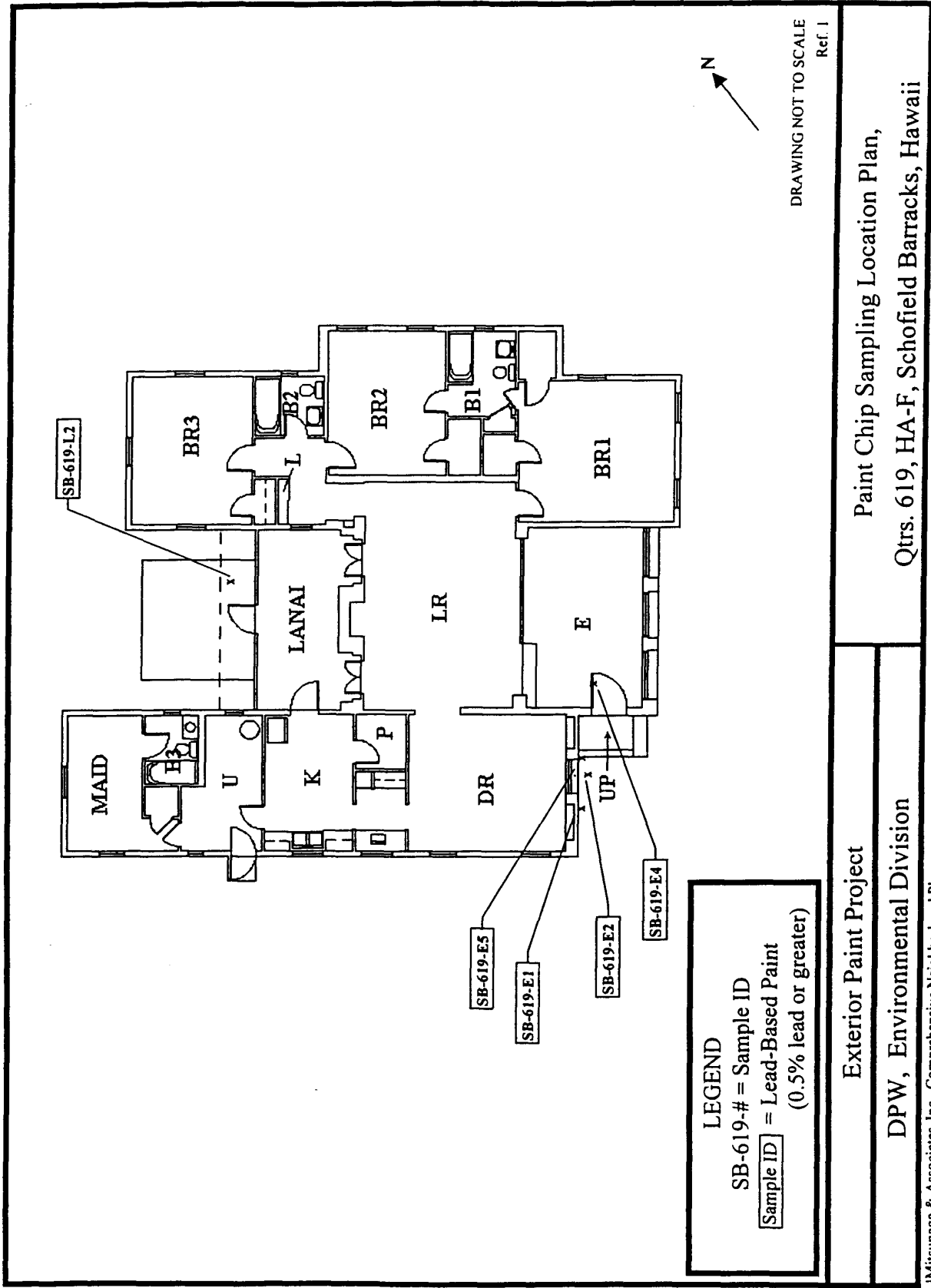




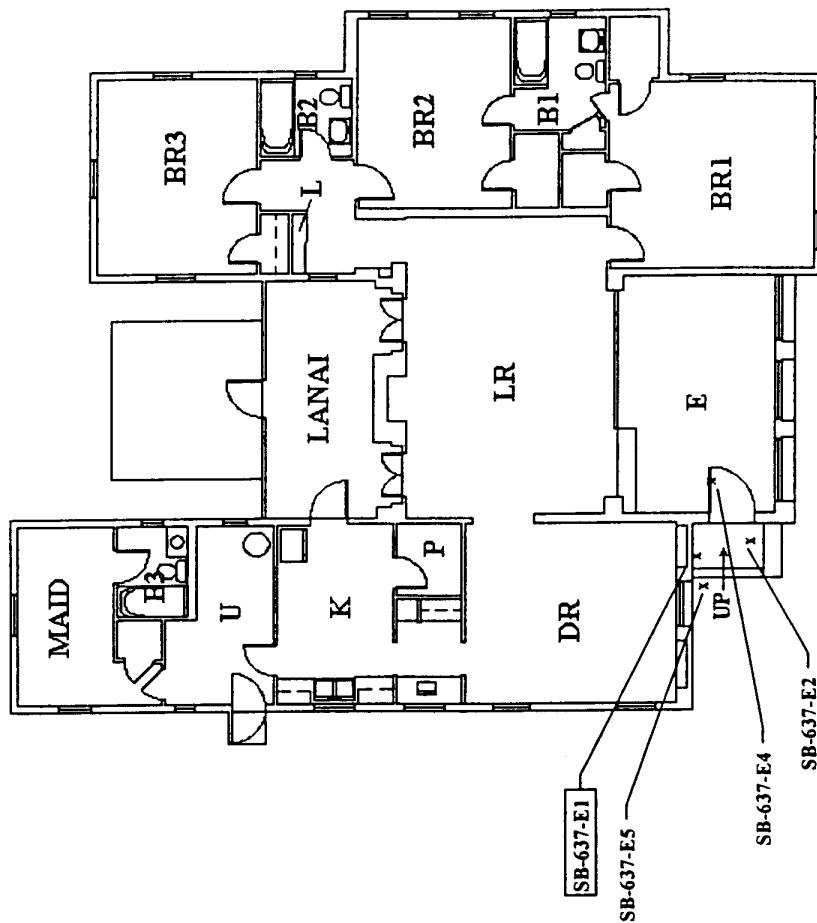
¹Mitsunaga & Associates, Inc., Comprehensive Neighborhood Plans,
Schofield Barracks, Military Housing Master Plan for Oahu



Mitsunaga & Associates, Inc., Comprehensive Neighborhood Plans,
Schofield Barracks, Military Housing Master Plan for Oahu



Mitsunaga & Associates, Inc., Comprehensive Neighborhood Plans,
Schofield Barracks, Military Housing Master Plan for Oahu



LEGEND

SB-637-# = Sample ID

[Sample ID] = Lead-Based Paint

(0.5% lead or greater)

DRAWING NOT TO SCALE
Ref. 1

Exterior Paint Project

Paint Chip Sampling Location Plan,
Qtrs. 637, HA-F, Schofield Barracks, Hawaii

DPW, Environmental Division

Mitsunaga & Associates, Inc., Comprehensive Neighborhood Plans,
Schofield Barracks, Military Housing Master Plan for Oahu

Appendix C

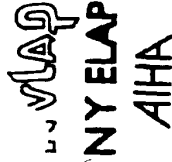
Lead Analytical Laboratory Results



AMA Analytical Services, Inc.

Electron & Optical Microscopy Services

CERTIFICATE OF ANALYSIS



Client: US Army Garrison Hawaii
 Address: Director of Public Works (DPW),
 Environmental Division - Building 105
 APV/G-GWV
 Wheeler Army Airfield, Hawaii 96857-5000
 Attention: Sieve Ozoa

Job Name: Batch 000308-3
 Job Location: Not Provided
 Chain Of Custody: 70255
 Date Analyzed: 5/11/00

Job Number: DOW 0002 (CLIN#-0002AH/9)
 P.O. Number: DAPC50-00-D-007
 Person Submitting: Date Kanchasa
 Report Date: 11-May-00

Page 1 of 1

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft ²)	Reporting Limit	Final Result	Comments
0034370	SD-105B-E1	Flame	Paint Chip	0.05	N/A	0.05 %Pb	< 0.05 %Pb	
0034371	SD-105B-E2	Flame	Paint Chip	0.05	N/A	0.05 %Pb	6.95 %Pb	
0034372	SB-105B-E3	Flame	Paint Chip	0.05	N/A	0.05 %Pb	< 0.05 %Pb	
0034373	SB-105B-E4	Flame	Paint Chip	0.05	N/A	0.05 %Pb	3.94 %Pb	
0034374	SB-105B-S1	Flame	Paint Chip	0.05	N/A	0.05 %Pb	< 0.05 %Pb	
0034375	SD-105B-ST1	Flame	Paint Chip	0.05	N/A	0.05 %Pb	4.02 %Pb	
0034376	SB-105B-ST2	Flame	Paint Chip	0.05	N/A	0.05 %Pb	2.86 %Pb	
0034377	SD-105B-C1	Flame	Paint Chip	0.05	N/A	0.05 %Pb	< 0.05 %Pb	
0034378	SB-105B-C2	Flame	Paint Chip	0.05	N/A	0.05 %Pb	4.92 %Pb	

Analysis Method for Flame (Wipes, Paints, Aids and Soil/Solids): EPA 600/R-93/200(M)-7420

Analysis Method For Furnace: Air: EPA 600/R-93/200(M)-7421, Water: EPA 200.9

N/A = Not Applicable mg/Kg = parts per million (ppm) by weight ug/L = parts per billion (ppb)

%Pb = percent lead by weight ug = micrograms
 Note: All results have two significant digits. Any additional digits shown should not be considered when interpreting the result

John Contreras

Analyst: John Contreras Technical Manager: G Edward Camcy

This report applies only to the sample, or samples, investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a mutual protection to clients, the public and these Laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization from us. Sample types, locations and collection protocols are based upon the information provided by the persons submitting them and, unless collected by personnel of these Laboratories, we expressly disclaim any knowledge and liability for the accuracy and completeness of this information. Residual sample material will be discarded in accordance with the appropriate regulatory guidelines, unless otherwise requested by the client. NVLAP Accreditation applies only to polarized light microscopy of bulk samples and transmission electron microscopy of air samples.

An AIHA (#8863), NVLAP (#1143), & New York EPLAP (#10970) Accredited Laboratory

All rights reserved. AMA Analytical Services, Inc.



Client: US Army Garrison Hawaii
Address: Director of Public Works (DPW),
Environmental Division - Building 105
APVG-GWV
Job Name: Batch 000508-4
Job Location: Not Provided
Job Number: DOW 0002 (CLINA-0002AF/10)
P.O. Number: DAPC50-00-D-007
Wheeler Army Airfield, Hawaii 96857-5000
Chain Of Custody: 70256
Date Analyzed: 5/15/00
Person Submitting: Dale Kanchisa
Report Date: 16-May-00
Attention: Steve O'Lea

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft ²)	Reporting Limit	Final Result	Comments
0034379	SN-107B-E1	Flame	Paint Chip	0.05	0.05	%Pb	< 0.05	%Pb
0034380	SR-107B-E2	Flame	Paint Chip	0.05	0.05	%Pb	8.58	%Pb
0034381	SB-107B-E3	Flame	Paint Chip	0.05	0.05	%Pb	< 0.05	%Pb
0034382	SB-107B-E4	Flame	Paint Chip	0.05	0.05	%Pb	5.38	%Pb
0034383	SB-107B-L1	Flame	Paint Chip	0.05	0.05	%Pb	< 0.05	%Pb
0034384	SR-107B-S1	Flame	Paint Chip	0.05	0.05	%Pb	< 0.05	%Pb
0034385	SB-107B-ST1	Flame	Paint Chip	0.05	0.05	%Pb	4.21	%Pb
0034386	SR-107B-ST2	Flame	Paint Chip	0.05	0.05	%Pb	2.99	%Pb
0034387	SB-107B-C1	Flame	Paint Chip	0.05	0.05	%Pb	< 0.05	%Pb
0034388	SB-107B-C2	Flame	Paint Chip	0.05	0.05	%Pb	9.62	%Pb

Analysis Method for Flame (Wipes, Paints, Airt and Soil/Solids): EPA 600/R-93/200(M)-7420

Analysis Method For Furnace: Air: EPA 600/R-93/200(M)-7421, Water: EPA 200.9

N/A = Not Applicable mg/Kg = parts per million (ppm) by weight

%Pb = percent lead by weight ug = micrograms ug/L = parts per billion (ppb)

Note: All results have two significant digits. Any additional digits shown should not be considered when interpreting the result.

Analyst: *John Contreras*
Technical Manager: G Edward Caney

This report applies only to the sample, or samples, investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a mutual protection to clients, the public and these Laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization from us. Sample types, locations and collection protocols are based upon the information provided by the persons submitting them and, unless collected by personnel of these Laboratories, we expressly disclaim any knowledge and liability for the accuracy and completeness of this information. Residual sample material will be discarded in accordance with the appropriate regulatory guidelines, unless otherwise requested by the client. NVLAP Accreditation applies only to polarized light microscopy of bulk samples and transmission electron microscopy of air samples.

All rights reserved AMA Analytical Services, Inc.



Client: US Army Garrison Hawaii Job Name: Batch 000511-1A Chain Of Custody: 70278
 Address: Director of Public Works (DPW), Environmental Division - Building 105 APVG-GWV Job Location: Not Provided Date Analyzed: 5/23/00
 Wheeler Army Airfield, Hawaii 96857-3000 Job Number: DO# 0002 (CLIN#-0001AF/30) Person Submitting: Dale Kanehisa
 P.O. Number: DAPC30-00-D-0007 Report Date: 24-May-00

Attention: Steve Ozoa

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft ²)	Reporting Limit	Final Result	Comments
0035093	SB-100A-E1	Flame	Paint Chip	***	N/A	0.05 %Pb	< 0.05 %Pb	
0035094	SB-100A-E2	Flame	Paint Chip	***	N/A	0.05 %Pb	6.23 %Pb	
0035095	SB-100A-E3	Flame	Paint Chip	***	N/A	0.05 %Pb	< 0.05 %Pb	
0035096	SB-100A-E4	Flame	Paint Chip	***	N/A	0.05 %Pb	4.16 %Pb	
0035097	SB-100A-L1	Flame	Paint Chip	***	N/A	0.05 %Pb	< 0.05 %Pb	
0035098	SB-100A-S1	Flame	Paint Chip	***	N/A	0.05 %Pb	< 0.05 %Pb	
0035099	SB-100A-ST1	Flame	Paint Chip	***	N/A	0.05 %Pb	6.79 %Pb	
0035100	SB-100A-ST2	Flame	Paint Chip	***	N/A	0.05 %Pb	5.21 %Pb	
0035101	SB-100A-C1	Flame	Paint Chip	***	N/A	0.05 %Pb	< 0.05 %Pb	
0035102	SB-100A-C2	Flame	Paint Chip	***	N/A	0.05 %Pb	8.36 %Pb	
0035103	SB-200-E1	Flame	Paint Chip	***	N/A	0.05 %Pb	0.14 %Pb	
0035104	SB-200-E2	Flame	Paint Chip	***	N/A	0.05 %Pb	10.58 %Pb	
0035105	SB-200-E3	Flame	Paint Chip	***	N/A	0.05 %Pb	< 0.05 %Pb	
0035106	SB-200-E4	Flame	Paint Chip	***	N/A	0.05 %Pb	3.60 %Pb	
0035107	SB-200-E7	Flame	Paint Chip	***	N/A	0.05 %Pb	10.97 %Pb	
0035108	SB-200-S1	Flame	Paint Chip	***	N/A	0.05 %Pb	0.14 %Pb	
0035109	SB-200-ST1	Flame	Paint Chip	***	N/A	0.05 %Pb	6.64 %Pb	
0035110	SB-200-ST2	Flame	Paint Chip	***	N/A	0.05 %Pb	8.37 %Pb	
0035111	SB-200-C1	Flame	Paint Chip	***	N/A	0.05 %Pb	0.12 %Pb	

This report applies only to the sample, or samples, investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a mutual protection to clients, the public and these Laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization from us. Sample types, locations and collection protocols are based upon the information provided by the persons submitting them and, unless collected by personnel of these Laboratories, we expressly disclaim any knowledge and liability for the accuracy and completeness of this information. Residual sample material will be discarded in accordance with the appropriate regulatory guidelines, unless otherwise requested by the client. NVLAP Accreditation applies only to polarized light microscopy of bulk samples and transmission electron microscopy of air samples.



AMA Analytical Services, Inc.

Electron & Optical Microscopy Services

CERTIFICATE OF ANALYSIS



Client: US Army Garrison Hawaii
Address: Director of Public Works (DPW),
Environmental Division - Building 105
APVG-GWV

Job Name: Batch 000311-1A
Job Location: Not Provided

Chain Of Custody: 70278
Date Analyzed: 5/23/00

Job Number: 96857-5000
P.O. Number: DAPC50-00-D-0007

Person Submitting: Date Kanchisa
Report Date: 24-May-00

Attention: Steve Ozoa

Page 2 of 2

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft ²)	Reporting Limit	Final Result	Comments
0035112	SB-200-C2	Flame	Paint Chip	***	N/A	0.05 %Pb	10.39 %Pb	
0035113	SB-211-E1	Flame	Paint Chip	***	N/A	0.05 %Pb	0.08 %Pb	
0035114	SB-211-E2	Flame	Paint Chip	***	N/A	0.05 %Pb	10.70 %Pb	
0035115	SB-211-E3	Flame	Paint Chip	***	N/A	0.05 %Pb	0.12 %Pb	
0035116	SB-211-E4	Flame	Paint Chip	***	N/A	0.05 %Pb	< 0.05 %Pb	
0035117	SB-211-E7	Flame	Paint Chip	***	N/A	0.05 %Pb	10.57 %Pb	
0035118	SB-211-S1	Flame	Paint Chip	***	N/A	0.05 %Pb	< 0.05 %Pb	
0035119	SB-211-ST1	Flame	Paint Chip	***	N/A	0.05 %Pb	7.53 %Pb	
0035120	SB-211-ST2	Flame	Paint Chip	***	N/A	0.05 %Pb	6.29 %Pb	
0035121	SB-211-C1	Flame	Paint Chip	***	N/A	0.05 %Pb	3.97 %Pb	
0035122	SB-211-C2	Flame	Paint Chip	***	N/A	0.05 %Pb	9.62 %Pb	

Analysis Method for Flame (Wipes, Paints, Aids and Soil/Solids): EPA 600/R-93/200(M)-7420

Analysis Method For Furnace: Air: EPA 600/R-93/200(M)-7421, Water: EPA 200.9

N/A = Not Applicable mg/Kg = parts per million (ppm) by weight

%Pb = percent lead by weight ug = micrograms ug/L = parts per billion (ppb)

Note: All results have two significant digits. Any additional digits shown should not be considered when interpreting the result.

Analyst: Young-Sil Hong Yang

Technical Manager: G Edward Carney

This report applies only to the sample, or samples, investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a mutual protection to clients, the public and these Laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization from us. Sample types, locations and collection protocols are based upon the information provided by the persons submitting them and, unless collected by personnel of these Laboratories, we expressly disclaim any knowledge and liability for the accuracy and completeness of this information. Residual sample material will be discarded in accordance with the appropriate regulatory guidelines, unless otherwise requested by the client. NY ELAP Accreditation applies only to polarized light microscopy of bulk samples and transmission electron microscopy of air samples.

An AIHA (#8867) NY ELAP (#1141), & New York ELAP (#10070) Accredited Laboratory.

All rights reserved. AMA Analytical Services, Inc.

CERTIFICATE OF ANALYSIS



Client: US Army (Jarrison Hawaii) Job Name: Datch 000511-1B Chain Of Custody: 70279
 Address: Director of Public Works (DPW), Environmental Division - Building 105 APVG-GWV Job Location: Not Provided Date Analyzed: 5/24/00
 Wheeler Army Airfield, Hawaii 96857-5000 Job Number: DOW 0002 (CLIN#-0001AF/21) Person Submitting: Dale Kanchissa
 P.O. Number: DAPC50-00-D-0007 Report Date: 24-May-00
 Attention: Steve Ozoa

Summary of Atomic Absorption Analysis for Lead

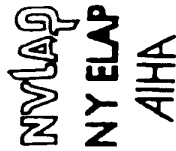
AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft ²)	Reporting Limit	Final Result	Comments
0035123	SB-225-E1	Flame	Paint Chip	***	N/A	0.05 %Pb	35.65 %Pb	
0035124	SB-225-E2	Flame	Paint Chip	***	N/A	0.05 %Pb	0.22 %Pb	
0035125	SB-225-F3	Flame	Paint Chip	***	N/A	0.05 %Pb	0.53 %Pb	
0035126	SB-225-F4	Flame	Paint Chip	***	N/A	0.05 %Pb	< 0.05 %Pb	
0035127	SB-225-F7	Flame	Paint Chip	***	N/A	0.05 %Pb	26.94 %Pb	
0035128	SB-225-E9	Flame	Paint Chip	***	N/A	0.05 %Pb	< 0.05 %Pb	
0035129	SB-227-F1	Flame	Paint Chip	***	N/A	0.05 %Pb	15.37 %Pb	
0035130	SB-227-E2	Flame	Paint Chip	***	N/A	0.05 %Pb	3.70 %Pb	
0035131	SB-227-F3	Flame	Paint Chip	***	N/A	0.05 %Pb	37.10 %Pb	
0035132	SB-227-E4	Flame	Paint Chip	***	N/A	0.05 %Pb	1.79 %Pb	
0035133	SB-227-E5	Flame	Paint Chip	***	N/A	0.05 %Pb	0.09 %Pb	
0035134	SB-227-E6	Flame	Paint Chip	***	N/A	0.05 %Pb	0.08 %Pb	
0035135	SB-227-E7	Flame	Paint Chip	***	N/A	0.05 %Pb	33.01 %Pb	
0035136	SB-227-E10	Flame	Paint Chip	***	N/A	0.05 %Pb	11.18 %Pb	
0035137	SB-227-L11	Flame	Paint Chip	***	N/A	0.05 %Pb	10.98 %Pb	
0035138	SB-229-F1	Flame	Paint Chip	***	N/A	0.05 %Pb	5.75 %Pb	
0035139	SB-229-F2	Flame	Paint Chip	***	N/A	0.05 %Pb	1.67 %Pb	
0035140	SB-229-F3	Flame	Paint Chip	***	N/A	0.05 %Pb	3.30 %Pb	
0035141	SB-229-E4	Flame	Paint Chip	***	N/A	0.05 %Pb	0.06 %Pb	

This report applies only to the sample, or samples, investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a mutual protection to clients, the public and these Laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization from us. Sample types, locations and collection protocols are based upon the information provided by the persons submitting them and, unless collected by personnel of these Laboratories, we expressly disclaim any knowledge and liability for the accuracy and completeness of this information. Residual sample material will be discarded in accordance with the appropriate regulatory guidelines, unless otherwise requested by the client. NYELAP Accreditation applies only to polarized light microscopy of bulk samples and transmission electron microscopy of air samples.

All rights reserved. AMA Analytical Services, Inc.



CERTIFICATE OF ANALYSIS



Client: US Army Garrison Hawaii
 Address: Director of Public Works (DPW),
 Environmental Division - Building 105
 APVG-GJWV
 Wheeler Army Airfield, Hawaii 96857-5000
 Attention: Steve Ozoa

Job Name: Batch 000511-1B
 Job Location: Not Provided
 Job Number: DOW 0002 (CLIN#-0001AF721)
 P.O. Number: DAPC50-00-0-0007

Chain Of Custody: 70279
 Date Analyzed: 5/24/00
 Person Submitting: Dale Kanehisa
 Report Date: 24-May-00

Flame
 Paint Chip
 5/22/00

RPD
 Flag

Page 2 of 2

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft ²)	Reporting Limit	Final Result	Comments
0035142	SB-229-E7	Flame	Paint Chip	****	N/A	0.05 %Pb	24.20 %Pb	
0035143	SB-229-E9	Flame	Paint Chip	****	N/A	0.05 %Pb	< 0.05 %Pb	
Analysis Method for Flame (Wipes, Paints, Aurs and Soil/Solids): EPA 600/R-93/200(M)-7420								
Analysis Method For Furnace: Air: EPA 600/R-93/200(M)-7421, Water: EPA 200.9								
N/A = Not Applicable mg/Kg = parts per million (ppm) by weight ug/L = parts per billion (ppb)								
%Pb = percent lead by weight ug = micrograms								
Note: All results have two significant digits. Any additional digits shown should not be considered when interpreting the result								
				Analyst: Young-Sil Hong Yang		Technical Manager: G Edward Coney		

[Signature]
 G Edward Coney

This report applies only to the sample, or samples, investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a mutual protection to clients, the public and these Laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization from us. Sample types, locations and collection protocols are based upon the information provided by the persons submitting them and, unless collected by personnel of these Laboratories, we expressly disclaim any knowledge and liability for the accuracy and completeness of this information. Residual sample material will be discarded in accordance with the appropriate regulatory guidelines, unless otherwise requested by the client. NVLAP Accreditation applies only to polarized light microscopy of bulk samples and transmission electron microscopy of air samples.

An AIHA (#8863), NVLAP (#1143), & New York ELAP (#10970) Accredited Laboratory



Client: US Army Garrison Hawaii
Address: Director of Public Works (DPW),
Environmental Division - Building 105
APVG-GWV

Job Name: Batch 000508-2
Job Location: Not Provided
Chain Of Custody: 70254
Date Analyzed: 5/15/00

Job Number: 0002 (CLIN# 0002A1/27)
P.O. Number: DAPC50-00-D-007
Person Submitting: Dalc Kanchisa
Report Date: 16-May-00

Attention: Steve Ozoa

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft ²)	Reporting Limit	Final Result	Comments
0034343	SD-445-E1	Flame	Paint Chip	0.05	N/A	0.05 %Pb	5.24 %Pb	
0034344	SD-445-E2	Flame	Paint Chip	0.05	N/A	0.05 %Pb	10.24 %Pb	
0034345	SB-445-E3	Flame	Paint Chip	0.05	N/A	0.05 %Pb	15.46 %Pb	
0034346	SB-445-E4	Flame	Paint Chip	0.05	N/A	0.05 %Pb	0.71 %Pb	
0034347	SB-445-E5	Flame	Paint Chip	0.06	N/A	0.06 %Pb	0.07 %Pb	
0034348	SD-445-E6	Flame	Paint Chip	0.05	N/A	0.05 %Pb	0.07 %Pb	
0034349	SD-445-E7	Flame	Paint Chip	0.05	N/A	0.05 %Pb	< 0.05 %Pb	
0034350	SD-447-E1	Flame	Paint Chip	0.05	N/A	0.05 %Pb	1.81 %Pb	
0034351	SB-447-E2	Flame	Paint Chip	0.05	N/A	0.05 %Pb	3.80 %Pb	
0034352	SB-447-E3	Flame	Paint Chip	0.05	N/A	0.05 %Pb	9.70 %Pb	
0034353	SD-447-E4	Flame	Paint Chip	0.05	N/A	0.05 %Pb	0.35 %Pb	
0034354	SB-447-E5	Flame	Paint Chip	0.05	N/A	0.05 %Pb	< 0.05 %Pb	
0034355	SB-447-E6	Flame	Paint Chip	0.05	N/A	0.05 %Pb	< 0.05 %Pb	
0034356	SB-447-E7	Flame	Paint Chip	0.05	N/A	0.05 %Pb	20.65 %Pb	
0034357	SB-448-E1	Flame	Paint Chip	0.05	N/A	0.05 %Pb	15.59 %Pb	
0034358	SR-448-E2	Flame	Paint Chip	0.05	N/A	0.05 %Pb	1.43 %Pb	
0034359	SR-448-E3	Flame	Paint Chip	0.05	N/A	0.05 %Pb	15.09 %Pb	
0034360	SR-448-E4	Flame	Paint Chip	0.05	N/A	0.05 %Pb	1.23 %Pb	
0034361	SR-448-E5	Flame	Paint Chip	0.05	N/A	0.05 %Pb	0.16 %Pb	

This report applies only to the sample, or samples, investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a mutual protection to clients, the public and these Laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization from us. Sample types, locations and collection protocols are based upon the information provided by the persons submitting them and, unless collected by personnel of these Laboratories, we expressly disclaim any knowledge and liability for the accuracy and completeness of this information. Residual sample material will be discarded in accordance with the appropriate regulatory guidelines, unless otherwise requested by the client. NVLAP Accreditation applies only to polarized light microscopy of bulk samples and transmission electron microscopy of air samples.

All rights reserved. AMA Analytical Services, Inc.



Electron & Optical Microscopy Services

CERTIFICATE OF ANALYSIS



Client: US Army Garrison Hawaii
 Address: Director of Public Works (DPW),
 Environmental Division - Building 105
 APVG-GWV
 Job Name: Batch 0005008-2
 Job Location: Not Provided
 Chain Of Custody: 70254
 Date Analyzed: 5/15/00
 Job Number: 96857-5000
 P.O. Number: DAPC50-00-D-007
 Person Submitting: Date Kanehisa
 Report Date: 16-May-00
 Attention: Steve Ozoa

Page 2 of 2

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft ²)	Reporting Limit	Final Result	Comments
0034362	SB-448-E6	Flame	Paint Chip	0.05	N/A	0.05 %Pb	3.23 %Pb	
0034363	SB-448-E7	Flame	Paint Chip	0.05	N/A	0.05 %Pb	16.71 %Pb	
0034364	SD-444-E1	Flame	Paint Chip	0.05	N/A	0.05 %Pb	1.18 %Pb	
0034365	SD-444-E3	Flame	Paint Chip	0.05	N/A	0.05 %Pb	14.43 %Pb	
0034366	SB-444-E4	Flame	Paint Chip	0.05	N/A	0.05 %Pb	0.09 %Pb	
0034367	SB-444-E5	Flame	Paint Chip	0.05	N/A	0.05 %Pb	< 0.05 %Pb	
0034368	SB-444-E6	Flame	Paint Chip	0.05	N/A	0.05 %Pb	< 0.05 %Pb	
0034369	SB-444-E7	Flame	Paint Chip	0.05	N/A	0.05 %Pb	18.69 %Pb	

Analysis Method for Flame (Wipes, Paints, Aids and Soil/Solids): EPA 600/R-93/200(M)-7420

Analysis Method For Furnace: Air: EPA 600/R-93/200(M)-7421, Water: EPA 200.9

N/A = Not Applicable mg/Kg = parts per million (ppm) by weight

%Pb = percent lead by weight ug = micrograms ug/L = parts per billion (ppb)

Note: All results have two significant digits. Any additional digits shown should not be considered when interpreting the result.

Analyst: John Contreras
 Technical Manager: G. Edward Carney

This report applies only to the sample, or samples, investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a mutual protection to clients, the public and these Laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization from us. Sample types, locations and collection protocols are based upon the information provided by the persons submitting them and, unless collected by personnel of these Laboratories, we expressly disclaim any knowledge and liability for the accuracy and completeness of this information. Residual sample material will be discarded in accordance with the appropriate regulatory guidelines, unless otherwise requested by the client. NYLAP Accreditation applies only to polarized light microscopy of bulk samples and transmission electron microscopy of air samples. All rights reserved. AMA Analytical Services, Inc.



Electron & Optical Microscopy Services

CERTIFICATE OF ANALYSIS



Client: US Army Garrison Hawaii
 Address: Director of Public Works (DPW),
 Environmental Division - Building 105
 APVG-GWV
 Wheeler Army Airfield, Hawaii 96857-5000
 Attention: Steve Ozoa

Job Name: Batch 000508-1
 Job Location: Not Provided
 Job Number: DO# 0002 (CLIN#-0002AH/7)
 P.O. Number: DAPC50-00-D-007

Chain Of Custody: 70253
 Date Analyzed: 5/11/00
 Person Submitting: Dale Kanchisa
 Report Date: 11-May-00

Page 1 of 1

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft²)	Reporting Limit	Final Result	Comments
0034336	SB-435-E1	Flame	Paint Chip	0.05	N/A	0.05 %Pb	0.05 %Pb	
0034337	SB-435-E2	Flame	Paint Chip	0.05	N/A	0.05 %Pb	10.42 %Pb	
0034338	SB-435-E3	Flame	Paint Chip	0.05	N/A	0.05 %Pb	8.05 %Pb	
0034339	SB-435-E4	Flame	Paint Chip	0.05	N/A	0.05 %Pb	0.40 %Pb	
0034340	SB-435-E5	Flame	Paint Chip	0.05	N/A	0.05 %Pb	0.06 %Pb	
0034341	SB-435-E6	Flame	Paint Chip	0.05	N/A	0.05 %Pb	9.91 %Pb	
0034342	SU-435-E7	Flame	Paint Chip	0.05	N/A	0.05 %Pb	18.70 %Pb	
Analysis Method for Flame (Wipes, Paints, Aids and Soil/Solids): EPA 600/R-93/200(M)-7420								
Analysis Method For Furnace: Air: EPA 600/R-93/200(M)-7421, Water: EPA 200.9								
N/A = Not Applicable mg/Kg = parts per million (ppm) by weight ug/L = parts per billion (ppb)								
%Pb = percent lead by weight ug = micrograms								
Note: All results have two significant digits. Any additional digits shown should not be considered when interpreting the result.								

John Contreras

Analyst:

John Contreras

Technical Manager:

G Edward Carney

This report applies only to the sample, or samples, investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a mutual protection to clients, the public and these Laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization from us. Sample types, locations and collection protocols are based upon the information provided by the persons submitting them and, unless collected by personnel of these Laboratories, we expressly disclaim any knowledge and liability for the accuracy and completeness of this information. Residual sample material will be discarded in accordance with the appropriate regulatory guidelines, unless otherwise requested by the client. NYELAP Accreditation applies only to polarized light microscopy of bulk samples and transmission electron microscopy of air samples.

All rights reserved AMA Analytical Services, Inc.



Electron & Optical Microscopy Services

CERTIFICATE OF ANALYSIS



Client: US Army Garrison Hawaii
 Address: Director of Public Works (DPW),
 Environmental Division - Building 105
 APVG-GWV
 Wheeler Army Airfield, Hawaii 96857-5000
 Job Name: Batch 000511-2A
 Job Location: Not Provided
 Chain Of Custody: 70280
 Date Analyzed: 5/24/00
 Job Number: DO# 0002 (CLIN-0001A/35)
 P.O. Number: DAPC50-00-D-0007
 Person Submitting: Date Kanehisa
 Report Date: 24-May-00
 Attention: Sieve Ozoa

Page 1 of 3

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft ²)	Reporting Limit	Final Result	Comments
0035144	SB-409A-E1	Flame	Paint Chip	****	N/A	0.05 %Pb	12.78 %Pb	
0035145	SB-409A-E2	Flame	Paint Chip	****	N/A	0.05 %Pb	5.48 %Pb	
0035146	SB-409A-E3	Flame	Paint Chip	****	N/A	0.05 %Pb	12.72 %Pb	
0035147	SB-409A-E4	Flame	Paint Chip	****	N/A	0.05 %Pb	< 0.05 %Pb	
0035148	SB-409A-E5	Flame	Paint Chip	****	N/A	0.05 %Pb	0.16 %Pb	
0035149	SB-409A-E6	Flame	Paint Chip	****	N/A	0.05 %Pb	1.74 %Pb	
0035150	SB-409A-E7	Flame	Paint Chip	****	N/A	0.05 %Pb	14.09 %Pb	
0035151	SB-544-E1	Flame	Paint Chip	****	N/A	0.05 %Pb	8.69 %Pb	
0035152	SB-544-E2	Flame	Paint Chip	****	N/A	0.05 %Pb	1.11 %Pb	
0035153	SB-544-E3	Flame	Paint Chip	****	N/A	0.05 %Pb	21.43 %Pb	
0035154	SB-544-E4	Flame	Paint Chip	****	N/A	0.05 %Pb	< 0.05 %Pb	
0035155	SB-544-E5	Flame	Paint Chip	****	N/A	0.05 %Pb	0.15 %Pb	
0035156	SB-544-E6	Flame	Paint Chip	****	N/A	0.05 %Pb	1.19 %Pb	
0035157	SB-544-E7	Flame	Paint Chip	****	N/A	0.05 %Pb	22.34 %Pb	
0035158	SB-546-E1	Flame	Paint Chip	****	N/A	0.05 %Pb	18.94 %Pb	
0035159	SB-546-E2	Flame	Paint Chip	****	N/A	0.05 %Pb	0.99 %Pb	
0035160	SB-546-E3	Flame	Paint Chip	****	N/A	0.05 %Pb	13.14 %Pb	
0035161	SB-546-E4	Flame	Paint Chip	****	N/A	0.05 %Pb	2.30 %Pb	
0035162	SB-546-E5	Flame	Paint Chip	****	N/A	0.05 %Pb	< 0.05 %Pb	

This report applies only to the sample, or samples, investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a mutual protection to clients, the public and these Laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization from us. Sample types, locations and collection protocols are based upon the information provided by the persons submitting them and, unless collected by personnel of these Laboratories, we expressly disclaim any knowledge and liability for the accuracy and completeness of this information. Residual sample material will be discarded in accordance with the appropriate regulatory guidelines, unless otherwise requested by the client. NVLAP Accreditation applies only to polarized light microscopy of bulk samples and transmission electron microscopy of air samples.

An AIHA (#8863), NVLAP (#1143), & New York ELAP (#10920) Accredited Laboratory

All rights reserved. AMA Analytical Services, Inc.



Client: US Army Garrison Hawaii
Address: Director of Public Works (DPW),
Environmental Division - Building 105
APVG-GWV
Job Name: Batch 000311-2A
Job Location: Not Provided
Chain Of Custody: 70280
Date Analyzed: 5/24/00
Job Number: DOW 0002 (CLIN#-0001A1/35)
P.O. Number: DAPC50-00-D-0007
Person Submitting: Dale Kanehisa
Report Date: 24-May-00
Attention: Steve Ozuu

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft ²)	Reporting Limit	Final Result	Comments
0035163	SB-546-E6	Flame	Paint Chip	0.05	N/A	0.05 %Pb	0.49 %Pb	
0035164	SB-546-E7	Flame	Paint Chip	0.05	N/A	0.05 %Pb	21.54 %Pb	
0035165	SB-526-E1	Flame	Paint Chip	0.05	N/A	0.05 %Pb	18.09 %Pb	
0035166	SB-526-E2	Flame	Paint Chip	0.05	N/A	0.05 %Pb	6.00 %Pb	
0035167	SB-526-E3	Flame	Paint Chip	0.05	N/A	0.05 %Pb	18.22 %Pb	
0035168	SB-526-E4	Flame	Paint Chip	0.05	N/A	0.05 %Pb	0.54 %Pb	
0035169	SB-526-E5	Flame	Paint Chip	0.05	N/A	0.05 %Pb	< 0.05 %Pb	
0035170	SB-526-E6	Flame	Paint Chip	0.05	N/A	0.05 %Pb	< 0.05 %Pb	
0035171	SB-526-E7	Flame	Paint Chip	0.05	N/A	0.05 %Pb	17.55 %Pb	
0035172	SB-514-E1	Flame	Paint Chip	0.05	N/A	0.05 %Pb	15.28 %Pb	
0035173	SB-514-E2	Flame	Paint Chip	0.05	N/A	0.05 %Pb	4.61 %Pb	
0035174	SB-514-E3	Flame	Paint Chip	0.05	N/A	0.05 %Pb	13.50 %Pb	
0035175	SB-514-E4	Flame	Paint Chip	0.05	N/A	0.05 %Pb	0.42 %Pb	
0035176	SB-514-E5	Flame	Paint Chip	0.05	N/A	0.05 %Pb	0.15 %Pb	
0035177	SB-514-E6	Flame	Paint Chip	0.05	N/A	0.05 %Pb	1.49 %Pb	
0035178	SB-514-E7	Flame	Paint Chip	0.05	N/A	0.05 %Pb	19.04 %Pb	

This report applies only to the sample, or samples, investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a mutual protection to clients, the public and these Laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization from us. Sample types, locations and collection protocols are based upon the information provided by the persons submitting them and, unless collected by personnel of these Laboratories, we expressly disclaim any knowledge and liability for the accuracy and completeness of this information. Residual sample material will be discarded in accordance with the appropriate regulatory guidelines, unless otherwise requested by the client. NVLAP Accreditation applies only to polarized light microscopy of bulk samples and transmission electron microscopy of air samples.

All rights reserved. AMA Analytical Services, Inc.

An AIHA (#8863), NVLAP (#1143) & New York ELAP (#10070) Accredited Laboratory



Electron & Optical Microscopy Services

CERTIFICATE OF ANALYSIS



Client: US Army Garrison Hawaii
Address: Director of Public Works (DPW),
 Environmental Division - Building 105
 APVG-GWV
 Wheeler Army Airfield, Hawaii 96857-5000

Job Name: Batch 000511-2A
Job Location: Not Provided

Chain Of Custody: 70280
Date Analyzed: 5/24/00

Job Number: DOW 0002 (CLIN#-0001AE/35)
P.O. Number: DAPCSO-00-D-0007

Person Submitting: Dale Kanchisa
Report Date: 24-May-00

Attention: Steve Ozoa

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft ²)	Reporting Limit	Final Result	Comments

Analysis Method for Flame (Wipes, Paints, Airs and Soil/Solids): EPA 600/R-93/200(M)-7420

Analysis Method For Furnace: Air: EPA 600/R-93/200(M)-7421, Water: EPA 200.9

N/A = Not Applicable mg/Kg = parts per million (ppm) by weight ug/L = parts per billion (ppb)

%Pb = percent lead by weight ug = micrograms
 Note: All results have two significant digits. Any additional digits shown should not be considered when interpreting the result.

Analyst: Young-Sil Hong Yang

Technical Manager: G Edward Carney

[Signature]

This report applies only to the sample, or samples, investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a mutual protection to clients, the public and these Laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization from us. Sample types, locations and collection protocols are based upon the information provided by the persons submitting them and, unless collected by personnel of these Laboratories, we expressly disclaim any knowledge and liability for the accuracy and completeness of this information. Residual sample material will be discarded in accordance with the appropriate regulatory guidelines, unless otherwise requested by the client. NYLAP Accreditation applies only to polarized light microscopy of bulk samples and transmission electron microscopy of air samples.



Electron & Optical Microscopy Services

CERTIFICATE OF ANALYSIS

NY ELAP
AIHA

Client: US Army Garrison Hawaii
Address: Director of Public Works (DPW),
Environmental Division - Building 105
APVG-GWV
Wheeler Army Airfield, Hawaii 96857-5000
Attention: Steve Orza

Job Name: Batch 000509-1
Job Location: Not Provided
Chain Of Custody: 70257
Date Analyzed: 05/12/2000

Job Number: DOW 0002 (CLIN#-0002AH/9)
P.O. Number: DAPC50-00-D-0007
Person Submitting: Dale Kanchisa
Report Date: 12-May-00

Page 1 of 1

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft ²)	Reporting Limit	Final Result	Comments
0034660	SB-502-E1	Flame	Paint Chip	***	N/A	0.05 %Pb	5.10 %Pb	
0034661	SB-502-E2	Flame	Paint Chip	***	N/A	0.05 %Pb	8.86 %Pb	
0034662	SB-502-E3	Flame	Paint Chip	***	N/A	0.05 %Pb	25.29 %Pb	
0034663	SB-502-E4	Flame	Paint Chip	***	N/A	0.05 %Pb	1.09 %Pb	
0034664	SB-502-E5	Flame	Paint Chip	***	N/A	0.05 %Pb	< 0.05 %Pb	
0034665	SB-502-E6	Flame	Paint Chip	***	N/A	0.05 %Pb	< 0.05 %Pb	
0034666	SB-502-E7	Flame	Paint Chip	***	N/A	0.05 %Pb	25.75 %Pb	

Analysis Method for Flame (Wipes, Paints, Aids and Soil/Solids): EPA 600/R-93/200(M)-7420

Analysis Method For Furnace: Air: EPA 600/R-93/200(M)-7421, Water: EPA 200.9

N/A = Not Applicable mg/Kg = parts per million (ppm) by weight

%Pb = percent lead by weight ug = micrograms ug/L = parts per billion (ppb)

Note: All results have two significant digits. Any additional digits shown should not be considered when interpreting the result.

Analyst: John Contreras

Technical Manager: G Edward Carney

This report applies only to the sample, or samples, investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a mutual protection to clients, the public and these Laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization from us. Sample types, locations and collection protocols are based upon the information provided by the persons submitting them and, unless collected by personnel of these Laboratories, we expressly disclaim any knowledge and liability for the accuracy and completeness of this information. Residual sample material will be discarded in accordance with the appropriate regulatory guidelines, unless otherwise requested by the client. NVLAP Accreditation applies only to polarized light microscopy of bulk samples and transmission electron microscopy of air samples.

All rights reserved. AMA Analytical Services, Inc.

AMA Analytical Services, Inc.



Electron & Optical Microscopy Services

CERTIFICATE OF ANALYSIS

NVLAP
NY ELAP
AIHA

Client: US Army Garrison Hawaii
Address: Director of Public Works (DPW)
Environmental Division - Building 105
APVG-GWV
Wheeler Army Airfield, Hawaii 96857-5000
Job Name: Batch 000509-2
Job Location: Not Provided
Chain Of Custody: 70258
Date Analyzed: 5/12/2000
Person Submitting: Dale Kanchisa
Report Date: 12-May-00
Job Number: DOW 0002 (CLJNH-0002A1H/5)
P.O. Number: DAPCSO-00-D-0007
Attention: Steve Ozoa

Page 1 of 1

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft ²)	Reporting Limit	Final Result	Comments
0034667	SB-613-B1	Flame	Paint Chip	****	N/A	0.05 %Pb	3.85 %Pb	
0034668	SB-613-B2	Flame	Paint Chip	****	N/A	0.05 %Pb	2.86 %Pb	
0034669	SB-613-B4	Flame	Paint Chip	****	N/A	0.05 %Pb	23.06 %Pb	
0034670	SB-613-E5	Flame	Paint Chip	****	N/A	0.05 %Pb	0.10 %Pb	
0034671	SB-613-L2	Flame	Paint Chip	****	N/A	0.05 %Pb	0.33 %Pb	

Analysis Method for Flame (Wipes, Paints, Ais and Soil/Solids): EPA 800/R-93/200(M)-7420

Analysis Method For Furnaces: Air: EPA 800/R-93/200(M)-7421, Water: EPA 200.9

N/A = Not Applicable mg/Kg = parts per million (ppm) by weight ug/L = parts per billion (ppb)

%Pb = percent lead by weight ug = micrograms

Note: All results have two significant digits. Any additional digits shown should not be considered when interpreting the result.

John Contreras
Analyst: John Contreras

G Edward Carney
Technical Manager: G Edward Carney

This report applies only to the sample, or samples, investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a mutual protection to clients, the public and these Laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization from us. Sample types, locations and collection protocols are based upon the information provided by the persons submitting them and, unless collected by personnel of these Laboratories, we expressly disclaim any knowledge and liability for the accuracy and completeness of this information. Residual sample material will be discarded in accordance with the appropriate regulatory guidelines, unless otherwise requested by the client. NVLAP Accreditation applies only to polarized light microscopy of bulk samples and transmission electron microscopy of air samples.



Client: US Army Garrison Hawaii
Address: Director of Public Works (DPW),
Environmental Division - Building 105
APVG-GWV
Job Name: Batch 0005111-3A
Job Location: Not Provided
Chain Of Custody: 70281
Date Analyzed: 5/24/00
Job Number: DOW 0002 (CLIN#-0001AF/19)
P.O. Number: DAPCS0-00-D-0007
Person Submitting: Date Kanehisa
Report Date: 24-May-00
Attention: Steve Ozoa

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft ²)	Reporting Limit	Final Result	Comments
0035179	SB-637-E1	Flame	Paint Chip	0.05	N/A	0.05	1.86	%Pb
0035180	SB-637-E2	Flame	Paint Chip	0.05	N/A	0.05	<	%Pb
0035181	SB-637-E4	Flame	Paint Chip	0.05	N/A	0.05	<	%Pb
0035182	SB-637-E5	Flame	Paint Chip	0.05	N/A	0.05	0.09	%Pb
0035183	SB-619-L1	Flame	Paint Chip	0.05	N/A	0.05	1.62	%Pb
0035184	SB-619-E2	Flame	Paint Chip	0.05	N/A	0.05	0.90	%Pb
0035185	SB-619-E4	Flame	Paint Chip	0.05	N/A	0.05	21.66	%Pb
0035186	SB-619-E5	Flame	Paint Chip	0.05	N/A	0.05	1.31	%Pb
0035187	SB-619-L2	Flame	Paint Chip	0.05	N/A	0.05	4.27	%Pb
0035188	SB-604-E1	Flame	Paint Chip	0.05	N/A	0.05	2.17	%Pb
0035189	SB-604-E2	Flame	Paint Chip	0.05	N/A	0.05	1.46	%Pb
0035190	SB-604-F4	Flame	Paint Chip	0.05	N/A	0.05	26.10	%Pb
0035191	SB-604-E5	Flame	Paint Chip	0.05	N/A	0.05	0.23	%Pb
0035192	SB-604-L2	Flame	Paint Chip	0.05	N/A	0.05	0.58	%Pb
0035193	SB-614-E1	Flame	Paint Chip	0.05	N/A	0.05	1.87	%Pb
0035194	SB-614-E2	Flame	Paint Chip	0.05	N/A	0.05	0.84	%Pb
0035195	SB-614-E4	Flame	Paint Chip	0.05	N/A	0.05	6.22	%Pb
0035196	SB-614-E5	Flame	Paint Chip	0.05	N/A	0.05	<	%Pb
0035197	SB-614-L2	Flame	Paint Chip	0.05	N/A	0.05	1.01	%Pb

This report applies only to the sample, or samples, investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a mutual protection to clients, the public and these Laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization from us. Sample types, locations and collection protocols are based upon the information provided by the persons submitting them and, unless collected by personnel of these Laboratories, we expressly disclaim any knowledge and liability for the accuracy and completeness of this information. Residual sample material will be discarded in accordance with the appropriate regulatory guidelines, unless otherwise requested by the client. NVLAP Accreditation applies only to polarized light microscopy of bulk samples and transmission electron microscopy of air samples.



Electron & Optical Microscopy Services

CERTIFICATE OF ANALYSIS

NVLAP
NY ELAP
AIHA

Client: US Army Garrison Hawaii
Address: Director of Public Works (DPW),
Environmental Division - Building 105
APVG-GWV
Wheeler Army Airfield, Hawaii 96857-5000
Job Name: Batch 000511-3A
Job Location: Not Provided
Chain Of Custody: 70281
Date Analyzed: 5/24/00
Job Number: DO# 0002 (CLINK-0001AF/19)
P.O. Number: DAPC50-00-D-0007
Person Submitting: Dale Kanehisa
Report Date: 24-May-00
Attention: Steve Ozoa

Page 2 of 2

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft ²)	Reporting Limit	Final Result	Comments
-------------------	----------------------	---------------	-------------	----------------	-------------------------------	-----------------	--------------	----------

Analysis Method for Flame (Wipes, Paints, Airs and Soil/Solids): EPA 600/R-93/200(M)-7420

Analysis Method For Furnace: Air: EPA 600/R-93/200(M)-7421, Water: EPA 200.9

N/A = Not Applicable mg/Kg = parts per million (ppm) by weight

%Pb = percent lead by weight ug = micrograms ug/L = parts per billion (ppb)

Note: All results have two significant digits. Any additional digits shown should not be considered when interpreting the result.

Analyst: John Contreras

Technical Manager: G Edward Carney

This report applies only to the sample, or samples, investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a mutual protection to clients, the public and these Laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization from us. Sample types, locations and collection protocols are based upon the information provided by the persons submitting them and, unless collected by personnel of these Laboratories, we expressly disclaim any knowledge and liability for the accuracy and completeness of this information. Residual sample material will be discarded in accordance with the appropriate regulatory guidelines, unless otherwise requested by the client. NVLAP Accreditation applies only to polarized light microscopy of bulk samples and transmission electron microscopy of air samples.

AMA Analytical Services, Inc. (AIHA #8863), NVLAP (#1143), & New York ELAP (#10920) Accredited Laboratory

Appendix D

Laboratory and Inspector Certificates

The American Industrial Hygiene Association

is proud to acknowledge that

AMA Analytical Services, Inc.

Lanham, MD

has fulfilled the requirements for and has been formally recognized by AIHA
and is technically competent to perform the analyses listed in the following

SCOPE OF ACCREDITATION

INDUSTRIAL HYGIENE

Originally Accredited: 03/01/04

___ Metals ___ Silica
X Asbestos PCM ___ Asbestos PLM
___ Organic Solvents ___ Diffusive Samples

ENVIRONMENTAL LEAD

Originally Accredited: 10/20/96

X Paint Chips X Air
X Dust Wipes X Soil

ENVIRONMENTAL MICROBIOLOGY

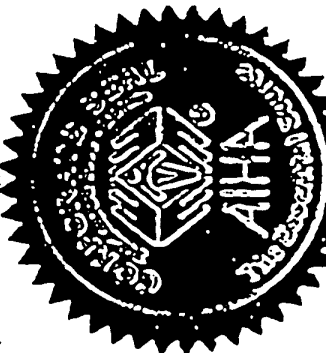
___ Bacteria
___ Fungi

The above named laboratory agrees to perform all analyses listed above in the scope of accreditation according to applicable policy requirements and acknowledges that continued accreditation is dependent on successful participation in the appropriate proficiency testing programs. This laboratory may be contacted to verify the current scope of accreditation, proficiency testing performance and accreditation status. Accreditation by AIHA is not a guarantee of the validity of the data generated by the laboratory.

Laboratory ID# 8863

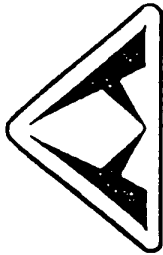
Certificate # 244

Accreditation Expires: 10/20/02



Christine A. Kearney
Christine A. Kearney
Chair, Analytical Accreditation Board

James R. Thornton
James R. Thornton, CIH, CSP
President, AIHA



MURANAKA ENVIRONMENTAL CONSULTANTS, INC.

Training Certificate

This is to certify that

DALE KANEHISA

has successfully completed the

LEAD RISK ASSESSOR REFRESHER COURSE

*based on the U.S. Environmental Protection Agency Model Course Curriculum and
the U.S. Environmental Protection Agency 40 CFR Part 745*

Lead; Requirements for Lead-Based Paint Activities in Target Housing & Child-Occupied Facilities

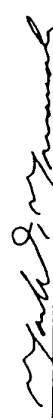
Certificate number: MEC-LR4-103098-04

May 25, 1999

Date of Attendance

Training Provider:
Muranaka Environmental Consultants, Inc.
500 Ala Kawa Street, Building 220, 2nd Floor
Honolulu, Hawaii 96817

*Phone: (808) 848-8866
Fax: (808) 847-5267*


Mark T. Muranaka, M.S., M.P.H.
President



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OFFICE OF
PREVENTION, PESTICIDES AND
TOXIC SUBSTANCES

PROOF OF CERTIFICATION FOR: Risk Assessor

**PLEASE USE THIS LETTER & A PHOTO ID
AS PROOF OF EPA CERTIFICATION AT JOB SITES
UNTIL YOU RECEIVE YOUR FORMAL EPA CERTIFICATION.**

March 3, 2000

Dale Kanehisa
95-1053 Ulahea St.
Mililani, HI 96789

Dear Mr. Kanehisa :

Thank you for submitting your application for individual certification to conduct lead-based paint activities in target housing and child-occupied facilities in accordance with Section 402 of the Toxic Substances Control Act (TSCA). Your application has been reviewed for administrative completeness and determined to be complete.

Since your application was received by EPA, your course completion certificate which serves as interim certification or your certification from an authorized State has expired or will expire in the near future. This letter will serve as "proof of certification" until you have received final EPA certification. When you are performing lead-based paint activities for which you must be certified, you are required to have "proof of certification" with you at the job site. Until you receive your official EPA badge, you may present this letter and some form of photo identification as "proof of certification." Once you receive final certification, this "proof of certification" letter will no longer be valid.

Internet Address (URL) • <http://www.epa.gov>

Recycled/Recyclable • Printed with Vegetable Oil Based Inks on Recycled Paper (Minimum 25% Postconsumer)

Appendix E

Chain of Custody Forms

Directorate of Public Works, Environmental Division

Bldg 105, Wheeler Army Airfield

U.S. Army Garrison, Hawaii (APVG-GWV)

onfield Barracks, HI 96857-5013

tel: (808) 656-2878 ext. 1036

Fax: (808) 656-1039

POC: Dale Kanehisa

AMA Batch #70255

Chain of Custody Record

Handwritten: ready in 5/11

DAPC50-00-D-0007

DO# 0002

CLIN#- 0002AH

Batch 000508-3

Sheet 1 of 1

Date Samples Shipped: May 8, 2000

Date Analysis Required: 24 hours after receipt

(PLEASE FAX COPY OF CHAIN UPON RECEIPT OF SAMPLES)

Lab ID Number	Sample Number	PLM Asbestos (Bulk)	Lead (paint)	Lead (soil)	Lead (dust)	Lead (TCLP)	Sampling		Sample Description	Sample Container	Remarks (sample preservation, handling procedures, etc.)
							Date	Time			
	SB-105B-E1		X				5/5	1345	mint green paint chip	zip bag	Please report results for paint in weight percentage
	SB-105B-E2		X				5/5	1345	mint green paint chip	zip bag	
	SB-105B-E3		X				5/5	1345	mint green paint chip	zip bag	
	SB-105B-E4		X				5/5	1345	forest green paint chip	zip bag	
	SB-105B-S1		X				5/5	1345	mint green paint chip	zip bag	
	SB-105B-ST1		X				5/5	1345	mint green paint chip	zip bag	
	SB-105B-ST2		X				5/5	1345	forest green paint chip	zip bag	
	SB-105B-C1		X				5/5	1345	mint green paint chip	zip bag	
	SB-105B-C2		X				5/5	1345	mint green paint chip	zip bag	
											Bill shipping for this batch to 0002AL
Total number of samples							9				

Sampler(s): D. Kanehisa

RELINQUISHED BY: _____ Date/Time _____

RELINQUISHED BY: _____ Date/Time _____

(Signature)

(Signature)

RECEIVED BY: _____ Date/Time _____

RECEIVED BY: _____ Date/Time _____

(Signature)

(Signature)

SHIPPED BY: _____ Date/Time _____

COURIER: _____ Date/Time _____

LABORATORY: _____ Date/Time _____

(Signature)

(Signature)

via FEDEX

(Signature)

Directorate of Public Works, Environmental Division
 Bldg. 105, Wheeler Army Airfield
 U.S. Army Garrison, Hawaii (APVG-GWV)
 hofield Barracks, HI 96857-5013
 n: (808) 656-2878 ext. 1036 Fax: (808) 656-1039
 POC: Dale Kanehisa

AMA Batch #70256

Chain of Custody Record

route in 5/16/00

DAPC50-00-D-0007
 DO# 0002
 CLIN#- 0002AF
 Batch 000508-4
 Sheet 1 of 1

Date Samples Shipped: May 8, 2000
 Date Analysis Required: 6 Working Days After Shipment Date
 (PLEASE FAX COPY OF CHAIN UPON RECEIPT OF SAMPLES)

Lab ID Number	Sample Number	PLM Asbestos (Bulk)	Lead (paint)	Lead (soil)	Lead (dust)	Lead (TCLP)	Sampling		Sample Description	Sample Container	Remarks (sample preservation, handling procedures, etc.)
							Date	Time			
	SB-107B-E1		X				5/5	1430	mint green paint chip	zip bag	Please report results for paint in weight percentage
	SB-107B-E2		X				5/5	1430	mint green paint chip	zip bag	
	SB-107B-E3		X				5/5	1430	mint green paint chip	zip bag	
	SB-107B-E4		X				5/5	1430	forest green paint chip	zip bag	
	SB-107B-L1		X				5/5	1430	mint green paint chip	zip bag	
	SB-107B-S1		X				5/5	1430	mint green paint chip	zip bag	
	SB-107B-ST1		X				5/5	1430	mint green paint chip	zip bag	
	SB-107B-ST2		X				5/5	1430	olive green paint chip	zip bag	
	SB-107B-C1		X				5/5	1430	mint green paint chip	zip bag	
	SB-107B-C2		X				5/5	1430	mint green paint chip	zip bag	
											Bill shipping for this batch to 0002AL
Total number of samples								10			

Sampler(s): D. Kanehisa

RELINQUISHED BY: _____ (Signature)	Date/Time _____	RELINQUISHED BY: _____ (Signature)	Date/Time _____
CEIVED BY: _____ (Signature)	Date/Time _____	RECEIVED BY: _____ (Signature)	Date/Time _____
SHIPPED BY: _____ (Signature)	Date/Time _____	COURIER: _____ (Signature)	Date/Time _____
		via FEDEX	
		LABORATORY: _____ (Signature)	Date/Time _____

Directorate of Public Works, Environmental Division

Bldg. 105, Wheeler Army Airfield

S. Army Garrison, Hawaii (APVG-GWV)

Schofield Barracks, HI 96857-5013

Ph: (808) 656-2878 ext. 1036

Fax: (808) 656-1039

POC: Dale Kanehisa

AMA Batch #70278

Chain of Custody Record

DAPC50-00-D-0007

DO# 0002

CLIN#- 0002AF

Batch 000511-1A

Sheet 1 of 2

Date Samples Shipped: May 11, 2000

Date Analysis Required: 8 Working Days After Shipment Date

(PLEASE FAX COPY OF CHAIN UPON RECEIPT OF SAMPLES)

Lab ID Number	Sample Number	PLM Asbestos (Bulk)	Lead (paint)	Lead (soil)	Lead (dust)	Lead (TCLP)	Sampling		Sample Description	Sample Container	Remarks (sample preservation, handling procedures, etc.)
							Date	Time			
	SB-100A-E1		X				5/10	930	mint green paint chip	zip bag	Please report results for paint in weight percentage
	SB-100A-E2		X				5/10	930	mint green paint chip	zip bag	
	SB-100A-E3		X				5/10	930	mint green paint chip	zip bag	
	SB-100A-E4		X				5/10	930	forest green paint chip	zip bag	
	SB-100A-L1		X				5/10	930	mint green paint chip	zip bag	
	SB-100A-S1		X				5/10	930	mint green paint chip	zip bag	
	SB-100A-ST1		X				5/10	930	mint green paint chip	zip bag	
	SB-100A-ST2		X				5/10	930	forest green paint chip	zip bag	
	SB-100A-C1		X				5/10	930	mint green paint chip	zip bag	
	SB-100A-C2		X				5/10	930	mint green paint chip	zip bag	
	SB-200-E1		X				5/10	1000	tan paint chip	zip bag	
	SB-200-E2		X				5/10	1000	tan paint chip	zip bag	
	SB-200-E3		X				5/10	1000	tan paint chip	zip bag	
	SB-200-E4		X				5/10	1000	green paint chip	zip bag	
	SB-200-E7		X				5/10	1000	green paint chip	zip bag	
	SB-200-S1		X				5/10	1000	tan paint chip	zip bag	
	SB-200-ST1		X				5/10	1000	tan paint chip	zip bag	
	SB-200-ST2		X				5/10	1000	green paint chip	zip bag	
	SB-200-C1		X				5/10	1000	tan paint chip	zip bag	
	SB-200-C2		X				5/10	1000	tan paint chip	zip bag	
	SB-211-E1		X				5/10	1100	mint green paint chip	zip bag	
	SB-211-E2		X				5/10	1100	mint green paint chip	zip bag	
	SB-211-E3		X				5/10	1100	mint green paint chip	zip bag	
	SB-211-E4		X				5/10	1100	forest green paint chip	zip bag	
	SB-211-E7		X				5/10	1100	forest green paint chip	zip bag	
Total number of samples							25				

Sampler(s): D. Kanehisa

RELINQUISHED BY:

Date/Time

RELINQUISHED BY:

Date/Time

(Signature)

5/10/00 5:30 pm

(Signature)

RECEIVED BY:

Date/Time

RECEIVED BY:

Date/Time

(Signature)

(Signature)

SHIPPED BY:

Date/Time

COURIER:

Date/Time

LABORATORY:

Date/Time

(Signature)

(Signature)

via FEDEX

07 P. 0139 No.

AMA Analytical Services Inc

May.15. 2000 11:05AM

Directorate of Public Works, Environmental Division

Bldg. 105, Wheeler Army Airfield

U.S. Army Garrison, Hawaii (APVG-GWV)

Schofield Barracks, HI 96857-5013

Ph: (808) 656-2878 ext. 1036

Fax: (808) 656-1039

POC: Dale Kanehisa

AMA Batch #70279

Chain of Custody Record

DAPC50-00-D-0007

DO# 0002

CLIN# 0002AF

Batch 000511-1B

Sheet 1 of 1

Date Samples Shipped: May 11, 2000

Date Analysis Required: 8 Working Days After Shipment Date

(PLEASE FAX COPY OF CHAIN UPON RECEIPT OF SAMPLES)

Lab ID Number	Sample Number	PLM Asbestos (Bulk)	Lead (paint)	Lead (soil)	Lead (dust)	Lead (TCLP)	Sampling		Sample Description	Sample Container	Remarks (sample preservation, handling procedures, etc.)
							Date	Time			
	SB-225-E1		X				5/9	1400	white paint chip	zip bag	Please report results for paint in weight percentage
	SB-225-E2		X				5/9	1400	white paint chip	zip bag	
	SB-225-E3		X				5/9	1400	mint green paint chip	zip bag	
	SB-225-E4		X				5/9	1400	mint green paint chip	zip bag	
	SB-225-E7		X				5/9	1400	mint green paint chip	zip bag	
	SB-225-E9		X				5/9	1400	mint green paint chip	zip bag	
	SB-227-E1		X				5/9	1440	white paint chip	zip bag	
	SB-227-E2		X				5/9	1440	mint green paint chip	zip bag	
	SB-227-E3		X				5/9	1440	mint green paint chip	zip bag	
	SB-227-E4		X				5/9	1440	mint green paint chip	zip bag	
	SB-227-E5		X				5/9	1440	red paint chip	zip bag	
	SB-227-E6		X				5/9	1440	red paint chip	zip bag	
	SB-227-E7		X				5/9	1440	white paint chip	zip bag	
	SB-227-E10		X				5/9	1440	white paint chip	zip bag	
	SB-227-E11		X				5/9	1440	white paint chip	zip bag	
	SB-229-E1		X				5/10	1030	white paint chip	zip bag	
	SB-229-E2		X				5/10	1030	white paint chip	zip bag	
	SB-229-E3		X				5/10	1030	mint green paint chip	zip bag	
	SB-229-E4		X				5/10	1030	mint green paint chip	zip bag	
	SB-229-E7		X				5/10	1030	mint green paint chip	zip bag	
	SB-229-E9		X				5/10	1030	mint green paint chip	zip bag	
Total number of samples								21			

Sampler(s): D. Kanehisa

RELINQUISHED By:

(Signature)

Date/Time

5/10/00 5:30pm

RELINQUISHED By:

(Signature)

Date/Time

RECEIVED BY:

(Signature)

Date/Time

RECEIVED BY:

(Signature)

Date/Time

SHIPPED BY:

(Signature)

Date/Time

COURIER:

(Signature)

Date/Time

via FEDEX

LABORATORY:

(Signature)

Date/Time

No. 0139 P. 22

AMA Analytical Services Inc

May 15, 2000 11:06AM

(Signature)

Directorate of Public Works, Environmental Division

Bldg 105, Wheeler Army Airfield

U.S. Army Garrison, Hawaii (APVG-GWV)

Wheeler Barracks, HI 96857-5013

Phone: (808) 656-2878 ext. 1036

Fax: (808) 656-1039

POC: Dale Kanehisa

AMA Batch #70254

Chain of Custody Record

*Nautilus
5/16*

DAPC50-00-D-0007

DO# 0002

CLIN#- 0002AF

Batch 000508-2

Sheet 1 of 2

Date Samples Shipped: May 8, 2000

Date Analysis Required: 6 Working Days After Shipment Date

(PLEASE FAX COPY OF CHAIN UPON RECEIPT OF SAMPLES)

Lab ID Number	Sample Number	PLM Asbestos (Bulk)	Lead (paint)	Lead (soil)	Lead (dust)	Lead (TCCLP)	Sampling		Sample Description	Sample Container	Remarks (sample preservation, handling procedures, etc.)
							Date	Time			
	SB-445-E1		X				5/4	1100	gray paint chip	zip bag	Please report results for paint in weight percentage
	SB-445-E2		X				5/4	1100	gray paint chip	zip bag	
	SB-445-E3		X				5/4	1100	gray paint chip	zip bag	
	SB-445-E4		X				5/4	1100	blue paint chip	zip bag	
	SB-445-E5		X				5/4	1100	red paint chip	zip bag	
	SB-445-E6		X				5/4	1100	red paint chip	zip bag	
	SB-445-E7		X				5/4	1100	gray paint chip	zip bag	
	SB-447-E1		X				5/5	920	mint green paint chip	zip bag	
	SB-447-E2		X				5/5	920	mint green paint chip	zip bag	
	SB-447-E3		X				5/5	920	mint green paint chip	zip bag	
	SB-447-E4		X				5/5	920	yellow paint chip	zip bag	Bill shipping for this batch to 0002AL
	SB-447-E5		X				5/5	920	red paint chip	zip bag	
	SB-447-E6		X				5/5	920	red paint chip	zip bag	
	SB-447-E7		X				5/5	920	mint green paint chip	zip bag	
	SB-448-E1		X				5/5	1000	tan paint chip	zip bag	
	SB-448-E2		X				5/5	1000	tan paint chip	zip bag	
	SB-448-E3		X				5/5	1000	tan paint chip	zip bag	
	SB-448-E4		X				5/5	1000	green paint chip	zip bag	
	SB-448-E5		X				5/5	1000	red paint chip	zip bag	
	SB-448-E6		X				5/5	1000	red paint chip	zip bag	
	SB-448-E7		X				5/5	1000	tan paint chip	zip bag	
	SB-444-E1		X				5/5	1050	tan paint chip	zip bag	
	SB-444-E2		X				5/5	1050	tan paint chip	zip bag	
	SB-444-E3		X				5/5	1050	tan paint chip	zip bag	
	SB-444-E4		X				5/5	1050	yellow paint chip	zip bag	
Total number of samples							28	24			

Sampler(s): D. Kanehisa

RELINQUISHED By:

Date/Time

RELINQUISHED By:

Date/Time

(Signature)

(Signature)

CEIVED BY:

Date/Time

RECEIVED BY:

Date/Time

(Signature)

(Signature)

SHIPPED BY:

Date/Time

COURIER:

Date/Time

LABORATORY:

Date/Time

(Signature)

(Signature)

via FEDEX

(Signature)

Directorate of Public Works, Environmental Division
 Bldg. 105, Wheeler Army Airfield
 U.S. Army Garrison, Hawaii (APVG-GWV)
 Schofield Barracks, HI 96857-5013
 Phone: (808) 656-2878 ext. 1036 Fax: (808) 656-1039
 POC: Dale Kanehisa

Chain of Custody Record

Date Samples Shipped: May 8, 2000
 Date Analysis Required: 6 Working Days After Shipment Date

CLIN#- 0002AF
 Batch 000508-2
 Sheet 2 of 2

Lab ID Number	Sample Number	PLM Asbestos (Bulk)	Lead (paint)	Lead (soil)	Lead (dust)	Lead (TCLP)	Sampling		Sample Description	Sample Container	Remarks (sample preservation, handling procedures, etc.)
							Date	Time			
	SB-444-E5		X				5/5	1050	red paint chip	zip bag	Please report results for paint in weight percentage
	SB-444-E6		X				5/5	1050	red paint chip	zip bag	
	SB-444-E7		X				5/5	1050	tan paint chip	zip bag	
											Bill shipping for this batch to 0002AL
Total number of samples							3				

KS [Signature]

5/1/60

Directorate of Public Works, Environmental Division Bldg. 105, Wheeler Army Airfield U.S. Army Garrison, Hawaii (APVG-GWV) Schofield Barracks, HI 96857-5013 Ph: (808) 656-2878 ext. 1036 Fax: (808) 656-1039 POC: Dale Kanehisa	AMA Batch #70280 <h2 style="margin: 0;">Chain of Custody Record</h2>
Date Samples Shipped: May 11, 2000 Date Analysis Required: <u>8 Working Days After Shipment Date</u> (PLEASE FAX COPY OF CHAIN UPON RECEIPT OF SAMPLES)	DAPC50-00-D-0007 DO# 0002 CLIN#- 0002AF Batch 000511-2A Sheet 1 of 2

Lab ID Number	Sample Number	PLM Asbestos (Bulk)	Lead (paint)	Lead (soil)	Lead (dust)	Lead (TCLP)	Sampling		Sample Description	Sample Container	Remarks (sample preservation, handling procedures, etc.)
							Date	Time			
	SB-409A-E1		X				5/9	930	tan paint chip	zip bag	Please report results for paint in weight percentage
	SB-409A-E2		X				5/10	930	tan paint chip	zip bag	
	SB-409A-E3		X				5/10	930	tan paint chip	zip bag	
	SB-409A-E4		X				5/10	930	brown paint chip	zip bag	
	SB-409A-E5		X				5/10	930	brown paint chip	zip bag	
	SB-409A-E6		X				5/10	930	brown paint chip	zip bag	
	SB-409A-E7		X				5/10	930	tan paint chip	zip bag	
	SB-544-E1		X				5/10	1130	tan paint chip	zip bag	
	SB-544-E2		X				5/10	1130	tan paint chip	zip bag	
	SB-544-E3		X				5/10	1130	tan paint chip	zip bag	
	SB-544-E4		X				5/10	1130	red paint chip	zip bag	
	SB-544-E5		X				5/10	1130	red paint chip	zip bag	
	SB-544-E6		X				5/10	1130	red paint chip	zip bag	
	SB-544-E7		X				5/10	1130	tan paint chip	zip bag	
	SB-546-E1		X				5/10	1130	gray paint chip	zip bag	
	SB-546-E2		X				5/10	1130	gray paint chip	zip bag	
	SB-546-E3		X				5/10	1130	gray paint chip	zip bag	
	SB-546-E4		X				5/10	1130	green paint chip	zip bag	
	SB-546-E5		X				5/10	1130	red paint chip	zip bag	
	SB-546-E6		X				5/10	1130	red paint chip	zip bag	
	SB-546-E7		X				5/10	1130	gray paint chip	zip bag	
	SB-526-E1		X				5/10	1430	mint green paint chip	zip bag	
	SB-526-E2		X				5/10	1430	mint green paint chip	zip bag	
	SB-526-E3		X				5/10	1430	mint green paint chip	zip bag	
	SB-526-E4		X				5/10	1430	forest green paint chip	zip bag	
Total number of samples							25				

Sampler(s): D. Kanehisa			
RELINQUISHED BY:	Date/Time	RELINQUISHED BY:	Date/Time
(Signature)	5/10/00 5:00pm	(Signature)	
RECEIVED BY:	Date/Time	RECEIVED BY:	Date/Time
(Signature)		(Signature)	
SHIPPED BY:	Date/Time	COURIER:	Date/Time
(Signature)		(Signature)	via FEDEX
		LABORATORY:	Date/Time
		(Signature)	5/15/00 11:00am

Directorate of Public Works, Environmental Division

Bldg. 105, Wheeler Army Airfield

U.S. Army Garrison, Hawaii (APVG-GWV)

Schofield Barracks, HI 96857-5013

Ph: (808) 656-2878 ext. 1036 Fax: (808) 656-1039

POC: Dale Kanchisa

Chain of Custody Record

CLIN#- 0002AF

Batch 000511-2A

Sheet 2 of 2

Date Samples Shipped: May 11, 2000

Date Analysis Required: 8 Working Days After Shipment Date

Lab ID Number	Sample Number	PLM Asbestos (Bulk)	Lead (paint)	Lead (soil)	Lead (dust)	Lead (TCLP)	Sampling		Sample Description	Sample Container	Remarks (sample preservation, handling procedures, etc.)
							Date	Time			
	SB-526-E5		X				5/10	1430	red paint chip	zip bag	Please report results for paint in weight percentage
	SB-526-E6		X				5/10	1430	mint green paint chip	zip bag	
	SB-526-E7		X				5/10	1430	mint green paint chip	zip bag	
	SB-514-E1		X				5/10	1515	gray paint chip	zip bag	
	SB-514-E2		X				5/10	1515	gray paint chip	zip bag	
	SB-514-E3		X				5/10	1515	gray paint chip	zip bag	
	SB-514-E4		X				5/10	1515	green paint chip	zip bag	
	SB-514-E5		X				5/10	1515	red paint chip	zip bag	
	SB-514-E6		X				5/10	1515	red paint chip	zip bag	
	SB-514-E7		X				5/10	1515	gray paint chip	zip bag	
Total number of samples								10			

Directorate of Public Works, Environmental Division

Bldg. 105, Wheeler Army Airfield

U.S. Army Garrison, Hawaii (APVG-GWV)

Schofield Barracks, HI 96857-5013

Ph: (808) 656-2878 ext. 1036 Fax: (808) 656-1039

POC: Dale Kanchisa

AMA Batch #70281

Chain of Custody Record

DAPC50-00-D-0007

DO# 0002

CLIN#- 0002AF

Batch 000511-3A

Sheet 1 of 1

Date Samples Shipped: May 11, 2000

Date Analysis Required: 8 working days after shipment date

(PLEASE FAX COPY OF CHAIN UPON RECEIPT OF SAMPLES)

Lab ID Number	Sample Number	PLM Asbestos (Bulk)	Lead (paint)	Lead (soil)	Lead (dust)	Lead (TCLP)	Sampling		Sample Description	Sample Container	Remarks (sample preservation, handling procedures, etc.)
							Date	Time			
	SB-637-E1		X				5/11	830	yellow paint chip	zip bag	Please report results for paint in weight percentage
	SB-637-E2		X				5/11	830	yellow paint chip	zip bag	
	SB-637-E4		X				5/11	830	blue paint chip	zip bag	
	SB-637-E5		X				5/11	830	red paint chip	zip bag	
	SB-619-E1		X				5/11	900	tan paint chip	zip bag	
	SB-619-E2		X				5/11	900	tan paint chip	zip bag	
	SB-619-E4		X				5/11	900	yellow paint chip	zip bag	
	SB-619-E5		X				5/11	900	red paint chip	zip bag	
	SB-619-L2		X				5/11	900	tan paint chip	zip bag	
	SB-604-E1		X				5/11	930	yellow paint chip	zip bag	
	SB-604-E2		X				5/11	930	yellow paint chip	zip bag	
	SB-604-E4		X				5/11	930	yellow paint chip	zip bag	
	SB-604-E5		X				5/11	930	red paint chip	zip bag	
	SB-604-L2		X				5/11	930	yellow paint chip	zip bag	
	SB-614-E1		X				5/11	1015	yellow paint chip	zip bag	
	SB-614-E2		X				5/11	1015	yellow paint chip	zip bag	
	SB-614-E4		X				5/11	1015	lavender paint chip	zip bag	
	SB-614-E5		X				5/11	1015	red paint chip	zip bag	
	SB-614-L2		X				5/11	1015	yellow paint chip	zip bag	
Total number of samples							19				

Sampler(s): D. Kanchisa

RELINQUISHED BY:

(Signature)

Date/Time

5/11/00 11:15 am

RELINQUISHED BY:

Date/Time

(Signature)

RECEIVED BY:

(Signature)

Date/Time

RECEIVED BY:

Date/Time

(Signature)

SHIPPED BY:

(Signature)

Date/Time

COURIER:

(Signature)

Date/Time

via FEDEX

LABORATORY

(Signature)

Date/Time

5/15/00 11:07 AM

NO. 0139 P. 26

AMA Analytical Services Inc

MAY 15, 2000 11:07 AM

**LEAD-BASED PAINT SURVEY
EXTERIOR PAINT PROJECT
WHEELER ARMY AIRFIELD, HOUSING AREA W13A, W13B
WHEELER ARMY AIRFIELD, OAHU, HAWAII**

Prepared for

Family Housing Division
Directorate of Public Works
U.S. Army Garrison Hawaii
Schofield Barracks, Hawaii 96857-5013

May 2000

Prepared by

Environmental Division
Directorate of Public Works
U.S. Army Garrison Hawaii
Schofield Barracks, Hawaii 96857-5013

APVG-GWV (200-1a)

MEMORANDUM FOR RECORD

Subject: Lead-Based Paint Survey, Wheeler Army Airfield, Housing Area W13A, W13B,
Exterior Paint Project

1. Enclosed is a preliminary lead-based paint survey for subject above.
2. Questions pertaining to the survey can be directed to Dale Kanehisa at 656-2878 extension 1036.

Encl.

TABLE OF CONTENTS

	<u>page</u>
MEMORANDUM FOR RECORD	i
TABLE OF CONTENTS.....	ii
1.0 INTRODUCTION	1
1.1 SITE DESCRIPTION	1
2.0 PAINT INSPECTION	1
2.1 PREVIOUS LEAD-BASED PAINT SURVEYS	1
2.2 METHODOLOGY	1
2.3 PAINT CHIP SAMPLE COLLECTION	2
2.4 SOIL SAMPLE COLLECTION	2
2.5 SAMPLE ANALYSIS	3
2.6 RESULTS	3
3.0 ADDENDUM	3
APPENDIX A: LEAD-BASED PAINT SAMPLE AREA IDENTIFICATION TABLE	
APPENDIX B: PAINT CHIP SAMPLE LOCATION	
APPENDIX C: LEAD ANALYTICAL LABORATORY RESULTS	
APPENDIX D: LABORATORY AND INSPECTOR CERTIFICATES	
APPENDIX E: CHAIN OF CUSTODY FORMS	

1.0 INTRODUCTION

The Directorate of Public Works (DPW), Environmental Division, performed a preliminary survey for lead-based paint (LBP) in housing area (HA) W13A and W13B, Wheeler Army Airfield from April 26, 2000 through May 2, 2000 by Dale Kanehisa, Lead Risk Assessor Certificate #MEC-LRA-103098-04. The exterior of all family housing units in Wheeler Army Airfield, HA-W13A and W13B are scheduled for repainting. Buildings 1330 through 1391 are included in the scope of the exterior paint project. The purpose of the survey was to identify the presence of LBP in the buildings to be repainted. As requested by the U.S. Army Corps of Engineers, the LBP survey sample size was based on attaining a 95% confidence level for exterior sites in HA-W13A and W13B.

1.1 Site Description

Wheeler Army Airfield, HA-W13A and W13B, also known as the Wiliwili Neighborhood in the Comprehensive Neighborhood Plan (CNP) for Wheeler Army Airfield, is a multi-family housing area located in the middle of the southeastern sector of the installation. There are a total of 46 family housing units in Wheeler Army Airfield, HA-W13A and W13B, which were all built in 1966.

2.0 PAINT INSPECTION

2.1 Previous Lead-Based Paint Surveys

Several Wheeler Army Airfield family housing units included in the repainting project have been previously surveyed for lead-based paint by DPW, Environmental Division. Available survey data were reviewed and confirmed during a site visit, and incorporated into this report.

2.2 Methodology

All the family housing units in HA-W13A and W13B are of similar construction for their specific housing area and are subject to the same maintenance policy. Paint inspections and sampling protocol followed U.S. Housing and Urban Development (HUD) "*Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing.*" In accordance with HUD Guidelines, to achieve the 95% confidence level, exterior sites of 21 buildings were inspected. To the extent

possible, vacant units were selected to minimize exposure to occupants. The remaining units were selected randomly.

2.3 Paint Chip Sample Collection

Walk-through inspections were conducted for all exterior painted surfaces to identify testing combinations and assess the current condition of the paint. The following nine testing combinations were identified for building exteriors in HA-W13A and W13B: walls, doors, window boards, window trim, eaves, lanai walls, lanai ceiling, lanai post, and service area wall. One sample of each testing combination was collected from every unit inspected. To the extent possible, inconspicuous areas were chosen for sample collection. In most cases, a 2" x 1" area was measured. Paint chip samples were scraped off the substrate into a plastic bag using a decontaminated chisel or paint scraper. Disposable latex gloves were worn to prevent contamination from the inspector's hands. All sampling tools were cleaned with alcohol wipes to prevent cross contamination with other samples. After collection, the sampled area was cleaned, sealed with caulk, and sprayed with epoxy paint. The location, building component, substrate, paint color and paint condition were recorded in a sampling table. Sample identification numbers included the installation, unit number, and testing combination (e.g. WAAF-1368E-E1).

2.4 Soil Sample Collection

As requested by the U.S. Army Corps of Engineers, soil samples were collected for baseline soil lead levels. Composite soil samples were collected along the perimeter of each unit inspected where areas of bare soil were present. Soil samples were collected using a clean 60 cc plastic syringe. The syringe was pushed into the soil to a depth of approximately ½ inch and twisted to extract the soil from the ground. The soil sample was then removed from the syringe using the plunger. Disposable latex gloves were worn to prevent contamination from the inspector's hands. All sampling tools were cleaned to prevent cross contamination between sampling. Each composite sample was comprised of six to eight sub-samples. Soil samples will be stored at DPW, Environmental Division until completion of the repainting project, at which time a second set of composite soil samples will be collected and submitted for laboratory analysis. If laboratory results show a post-painting soil sample to contain lead levels greater than 2,000 µg/g, the first soil sample set will be submitted to the laboratory to help determine if contamination has occurred as a result of the repainting project.

2.5 Sample Analysis

Samples were packaged and shipped, along with a chain of custody document, to AMA Analytical Services, Inc., which is an AIHA accredited laboratory. A total of 172 paint chip samples of were submitted for analysis. The laboratory was requested to report results in weight percentage.

2.6 Results

Laboratory results were compared with appropriate standards. In accordance with the standards set by the HUD guidelines, any paint containing 0.5% lead or greater is considered LBP. Using HUD standards, seven of the nine exterior testing combinations were identified to be LBP in at least one unit. The testing combinations identified with LBP for building exteriors in HA-W13A and W13B are the doors, window boards, window trim, eaves, lanai ceiling, lanai post, and service area wall. Complete results can be found in the lead sampling data table in Appendix A. Paint chip sample locations are shown in Appendix B. Analytical laboratory results can be found in Appendix C. Laboratory and inspector certificates can be found in Appendix D. Chain of custody forms are presented in Appendix E.

3.0 ADDENDUM

This research was supported in part by an appointment to the Postgraduate Environmental Management Participation Program at the U.S. Army Environmental Center administered by the Oak Ridge Institute for Science and Education through an interagency agreement between the U.S. Department of Energy and USAEC.

Appendix A

Lead-Based Paint Sample Area Identification Table

LEAD SAMPLING DATA TABLE

Sample Number	Sample Description	Substrate	Condition	Lead Content
WAAF-1330C-E1	Tan wall paint	CMU	Fair	0.13%
WAAF-1330C-E2	Mustard door paint	Wood	Fair	0.05%
WAAF-1330C-E3	Off-white window board paint	Wood	Intact	3.23%
WAAF-1330C-E4	Mustard eave paint	Wood	Poor	12.26%
WAAF-1330C-E9	Mustard window trim paint	Wood	Fair	2.21%
WAAF-1330C-L1	Tan lanai wall paint	CMU	Fair	<0.05%
WAAF-1330C-L2	Mustard lanai ceiling paint	Wood	Poor	0.47%
WAAF-1330C-L3	Mustard lanai post paint	Metal	Poor	0.14%
WAAF-1330C-S1	Mustard service wall paint	CMU	Fair	0.09%
WAAF-1331A-E1	Tan wall paint	CMU	Fair	<0.05%
WAAF-1331A-E2	Yellow door paint	Wood	Fair	4.31%
WAAF-1331A-E3	Off-white window board paint	Wood	Fair	6.91%
WAAF-1331A-E4	Yellow eave paint	Wood	Fair	9.18%
WAAF-1331A-E9	Yellow window trim paint	Wood	Fair	3.10%
WAAF-1330C-L2	Yellow lanai ceiling paint	Wood	Poor	2.28%
WAAF-1331A-L3	Off-white lanai post paint	Metal	Poor	0.12%
WAAF-1331A-S1	Mustard service wall paint	CMU	Fair	<0.05%
WAAF-1332C-E1	Tan wall paint	CMU	Fair	0.13%
WAAF-1332C-E2	Gray door paint	Wood	Intact	0.47%
WAAF-1332C-E3	Off-white window board paint	Wood	Fair	1.66%
WAAF-1332C-E4	Yellow eave paint	Wood	Poor	12.50%
WAAF-1332C-E9	Yellow window trim paint	Wood	Fair	5.17%
WAAF-1332C-L1	Tan lanai wall paint	CMU	Intact	<0.05%
WAAF-1332C-L2	Yellow lanai ceiling paint	Wood	Fair	0.66%
WAAF-1332C-L3	Yellow lanai post paint	Metal	Poor	0.19%
WAAF-1332C-S1	Mustard service wall paint	CMU	Fair	<0.05%
WAAF-1338A-P4 [†]	Cream wall paint	CMU	Poor	0.026%
WAAF-1338A-E2	Brown door paint	Wood	Fair	3.50%
WAAF-1338A-E3	Off-white window board paint	Wood	Fair	0.81%
WAAF-1338A-P3 [†]	Mustard eave paint	Wood	Poor	3.70%
WAAF-1338A-E9	Tan window trim paint	Wood	Fair	0.25%
WAAF-1338A-L1	Cream lanai wall paint	CMU	Intact	<0.05%
WAAF-1338A-P2 [†]	Mustard lanai ceiling paint	Wood	Poor	1.80%
WAAF-1338A-P1 [†]	Off-white lanai post paint	Metal	Fair	0.50%
WAAF-1338A-S1	Mustard service wall paint	CMU	Fair	<0.05%
WAAF-1340A-E1 [†]	Cream wall paint	CMU	fair	0.0079%
WAAF-1340A-E2 [†]	Mustard eave paint	Wood	Poor	4.6000%
WAAF-1340A-E3 [†]	Mustard door paint	Wood	Intact	1.1000%
WAAF-1340A-E4 [†]	Off-white window board paint	Wood	Fair	0.5500%
WAAF-1340A-E5 [†]	Mustard window trim paint	Wood	Fair	0.7800%
WAAF-1340A-L2 [†]	Mustard lanai ceiling paint	Wood	Poor	0.4200%
WAAF-1340A-L4 [†]	Mustard lanai post paint	Metal	Poor	0.3600%
WAAF-1340A-SV1 [†]	Mustard service wall paint	CMU	Fair	0.0057%
WAAF-1341B-E1	Tan wall paint	CMU	Fair	<0.05%
WAAF-1341B-E2	Brown door paint	Wood	Intact	1.45%
WAAF-1341B-E3	Off-white window board paint	Wood	Poor	<0.05%

Sample Number	Sample Description	Substrate	Condition	Lead Content
WAAF-1341B-E4	Brown eave paint	Wood	Poor	2.14%
WAAF-1341B-E9	Light brown window trim paint	Wood	Fair	7.13%
WAAF-1341B-L1	Tan lanai wall paint	CMU	Intact	<0.05%
WAAF-1341B-L2	Brown lanai ceiling paint	Wood	Fair	7.59%
WAAF-1341B-L3	Brown lanai post paint	Metal	Poor	0.25%
WAAF-1341B-S1	Tan service wall paint	CMU	Intact	<0.05%
WAAF-1343C-E1	Cream wall paint	CMU	Fair	<0.05%
WAAF-1343C-E2	Maroon door paint	Wood	Intact	5.93%
WAAF-1343C-E3	Off-white window board paint	Wood	Fair	0.10%
WAAF-1343C-E4	Mustard eave paint	Wood	Poor	4.89%
WAAF-1343C-E9	Mustard window trim paint	Wood	Poor	1.23%
WAAF-1343C-L1	Cream lanai wall paint	CMU	Intact	<0.05%
WAAF-1343C-L2	Brown lanai ceiling paint	Wood	Intact	6.41%
WAAF-1343C-L3	Brown lanai post paint	Metal	Fair	3.81%
WAAF-1343C-S1	Brownish-orange service wall paint	CMU	Fair	<0.05%
WAAF-1350B-E1	Tan wall paint	CMU	Fair	0.11%
WAAF-1350B-E2	Yellow door paint	Wood	Fair	2.93%
WAAF-1350B-E3	Off-white window board paint	Wood	Fair	1.51%
WAAF-1350B-E4	Mustard eave paint	Wood	Poor	0.98%
WAAF-1350B-E9	Yellow window trim paint	Wood	Poor	2.57%
WAAF-1350B-L1	Tan lanai wall paint	CMU	Fair	<0.05%
WAAF-1350B-L2	Mustard lanai ceiling paint	Wood	Fair	7.09%
WAAF-1350B-L3	Brown lanai post paint	Metal	Fair	0.13%
WAAF-1350B-S1	Mustard service wall paint	CMU	Fair	0.07%
WAAF-1354E-E1	Tan wall paint	CMU	Fair	0.16%
WAAF-1354E-E2	Brown door paint	Wood	Fair	5.66%
WAAF-1354E-E3	Off-white window board paint	Wood	Fair	1.00%
WAAF-1354E-E4	Brown eave paint	Wood	Poor	4.91%
WAAF-1354E-E9	Brown window trim paint	Wood	Fair	0.68%
WAAF-1354E-L1	Tan lanai wall paint	CMU	Intact	<0.05%
WAAF-1354E-L2	Brown lanai ceiling paint	Wood	Poor	0.78%
WAAF-1354E-L3	Brown lanai post paint	Metal	Intact	0.10%
WAAF-1354E-S1	Brown service wall paint	CMU	Fair	<0.05%
WAAF-1360A-E1	Tan wall paint	CMU	Intact	<0.05%
WAAF-1360A-E2	Pink door paint	Wood	Fair	<0.05%
WAAF-1360A-E3	Off-white window board paint	Wood	Intact	3.82%
WAAF-1360A-E4	Mustard eave paint	Wood	Fair	9.53%
WAAF-1360A-E9	Yellow window trim paint	Wood	Intact	5.45%
WAAF-1360A-L2	Mustard lanai ceiling paint	Wood	Fair	4.64%
WAAF-1360A-L3	Brown lanai post paint	Metal	Poor	0.22%
WAAF-1360A-S1	Mustard service wall paint	CMU	Fair	<0.05%
WAAF-1363A-E1	Tan wall paint	CMU	Fair	<0.05%
WAAF-1363A-E2	Brown door paint	Wood	Fair	4.75%
WAAF-1363A-E3	Off-white window board paint	Wood	Fair	3.93%
WAAF-1363A-E4	Brown eave paint	Wood	Poor	4.06%
WAAF-1363A-E9	Light brown window trim paint	Wood	Poor	1.74%
WAAF-1363A-L1	Tan lanai wall paint	CMU	Intact	<0.05%
WAAF-1363A-L2	Brown lanai ceiling paint	Wood	Poor	6.63%
WAAF-1363A-L3	Brown lanai post paint	Metal	Fair	0.10%

Sample Number	Sample Description	Substrate	Condition	Lead Content
WAAF-1363A-S1	Brown service wall paint	CMU	Intact	<0.05%
WAAF-1364B-E1	Tan wall paint	CMU	Fair	<0.05%
WAAF-1364B-E2	Brown door paint	Wood	Intact	1.87%
WAAF-1364B-E3	Off-white window board paint	Wood	Intact	0.21%
WAAF-1364B-E4	Brown eave paint	Wood	Poor	4.72%
WAAF-1364B-E9	Brown window trim paint	Wood	Fair	0.84%
WAAF-1364B-L1	Tan lanai wall paint	CMU	Intact	<0.05%
WAAF-1364B-L2	Brown lanai ceiling paint	Wood	Fair	8.51%
WAAF-1364B-L3	Brown lanai post paint	Metal	Poor	0.13%
WAAF-1364B-S1	Brown service wall paint	CMU	Fair	<0.05%
WAAF-1368E-E1	Cream wall paint	CMU	Fair	<0.05%
WAAF-1368E-E2	Brown door paint	Wood	Fair	6.31%
WAAF-1368E-E3	Off-white window board paint	Wood	Fair	2.83%
WAAF-1368E-E4	Mustard eave paint	Wood	Poor	4.53%
WAAF-1368E-E9	Mustard window trim paint	Wood	Poor	3.56%
WAAF-1368E-L1	Cream lanai wall paint	CMU	Fair	<0.05%
WAAF-1368E-L2	Brown lanai ceiling paint	Wood	Fair	8.14%
WAAF-1368E-L3	Brown lanai post paint	Metal	Fair	0.43%
WAAF-1368E-S1	Mustard service wall paint	CMU	Fair	<0.05%
WAAF-1372E-E1	Tan wall paint	CMU	Fair	<0.05%
WAAF-1372E-E2	Yellow door paint	Wood	Fair	0.06%
WAAF-1372E-E3	Off-white window board paint	Wood	Fair	0.66%
WAAF-1372E-E4	Yellow eave paint	Wood	Poor	5.80%
WAAF-1372E-E9	Yellow window trim paint	Wood	Poor	6.25%
WAAF-1372E-L1	Tan lanai wall paint	CMU	Intact	<0.05%
WAAF-1372E-L2	Yellow lanai ceiling paint	Wood	Intact	9.52%
WAAF-1372E-L3	Brown lanai post paint	Metal	Poor	0.29%
WAAF-1372E-S1	Mustard service wall paint	CMU	Fair	<0.05%
WAAF-1375F-E1	Tan wall paint	CMU	Intact	<0.05%
WAAF-1375F-E2	Brown door paint	Wood	Fair	4.00%
WAAF-1375F-E3	Off-white window board paint	Wood	Intact	0.05%
WAAF-1375F-P2 ¹	Brown eave paint	Wood	Poor	3.30%
WAAF-1375F-E9	Brown window trim paint	Wood	Intact	0.22%
WAAF-1375F-L1	Tan lanai wall paint	CMU	Intact	<0.05%
WAAF-1375F-L2	Cream lanai ceiling paint	Wood	Intact	5.95%
WAAF-1375F-L3	Cream lanai post paint	Metal	Fair	1.21%
WAAF-1375F-S1	Tan service wall paint	CMU	Intact	<0.05%
WAAF-1377C-E1	Tan wall paint	CMU	Intact	<0.05%
WAAF-1377C-E2	Yellow door paint	Wood	Fair	4.92%
WAAF-1377C-E3	Off-white window board paint	Wood	Fair	0.12%
WAAF-1377C-E4	Yellow eave paint	Wood	Poor	5.66%
WAAF-1377C-E9	Yellow window trim paint	Wood	Fair	0.40%
WAAF-1377C-L1	Tan lanai wall paint	CMU	Intact	0.06%
WAAF-1377C-L2	Yellow lanai ceiling paint	Wood	Poor	4.12%
WAAF-1377C-L3	Brown lanai post paint	Metal	Poor	2.79%
WAAF-1377C-S1	Yellow service paint	CMU	Fair	<0.05%
WAAF-1380A-E1	Cream wall paint	CMU	Fair	<0.05%
WAAF-1380A-E2	Mauve door paint	Wood	Intact	0.09%
WAAF-1380A-E3	Off-white window board paint	Wood	Intact	0.11%

Sample Number	Sample Description	Substrate	Condition	Lead Content
WAAF-1380A-E4	Mustard eave paint	Wood	Poor	7.29%
WAAF-1380A-E9	Mustard window trim paint	Wood	Fair	1.54%
WAAF-1380A-L2	Mustard lanai ceiling paint	Wood	Poor	5.06%
WAAF-1380A-L3	Brown lanai post paint	Metal	Poor	0.26%
WAAF-1380A-S1	Mustard service wall paint	CMU	Fair	0.09%
WAAF-1385D-E1	Tan wall paint	CMU	Fair	0.09%
WAAF-1385D-E2	Brown door paint	Wood	Intact	1.68%
WAAF-1385D-E3	Off-white window board paint	Wood	Fair	3.36%
WAAF-1385D-E4	Brown eave paint	Wood	Fair	1.61%
WAAF-1385D-E9	Brown window trim paint	Wood	Fair	0.58%
WAAF-1385D-L1	Cream lanai wall paint	CMU	Intact	<0.05%
WAAF-1385D-L2	Brown lanai ceiling paint	Wood	Poor	4.34%
WAAF-1385D-L3	Brown lanai post paint	Metal	Fair	0.11%
WAAF-1385D-S1	Brown service wall paint	CMU	Fair	0.05%
WAAF-1388D-E1	Light brown wall paint	CMU	Fair	<0.05%
WAAF-1388D-E2	Yellow door paint	Wood	Intact	1.35%
WAAF-1388D-E3	Off-white window board paint	Wood	Intact	0.57%
WAAF-1388D-E4	Light brown eave paint	Wood	Fair	5.88%
WAAF-1388D-E9	Tan window trim paint	Wood	Intact	1.00%
WAAF-1388D-L1	Light brown lanai wall paint	CMU	Intact	<0.05%
WAAF-1388D-L2	Tan lanai ceiling paint	Wood	Poor	7.98%
WAAF-1388D-L3	Brown lanai post paint	Metal	Poor	0.10%
WAAF-1388D-S1	Tan service wall paint	CMU	Poor	0.06%
WAAF-1390A-E1	Cream wall paint	CMU	Fair	0.19%
WAAF-1390A-E2	Maroon door paint	Wood	Fair	1.39%
WAAF-1390A-E3	Off-white window board paint	Wood	Poor	1.50%
WAAF-1390A-E4	Mustard eave paint	Wood	Poor	8.66%
WAAF-1390A-E9	Mustard window trim paint	Wood	Fair	0.09%
WAAF-1390A-L1	White lanai wall paint	CMU	Intact	<0.05%
WAAF-1390A-L2	White lanai ceiling paint	Wood	Intact	5.20%
WAAF-1390A-L3	White lanai post paint	Metal	Intact	0.14%
WAAF-1390A-S1	Mustard service wall paint	CMU	Poor	<0.05%
WAAF-1391E-E1	Tan wall paint	CMU	Intact	<0.05%
WAAF-1391E-E2	White door paint	Wood	Fair	6.36%
WAAF-1391E-E3	Off-white window board paint	Wood	Fair	1.66%
WAAF-1391E-E4	Mustard eave paint	Wood	Fair	7.02%
WAAF-1391E-E9	Yellow window trim paint	Wood	Fair	0.22%
WAAF-1391E-L1	Tan lanai wall paint	CMU	Fair	<0.05%
WAAF-1391E-L2	Yellow lanai ceiling paint	Wood	Fair	5.32%
WAAF-1391E-L3	Yellow lanai post paint	Metal	Fair	0.14%
WAAF-1391E-S1	Mustard service wall paint	CMU	Intact	0.53%

[†] Samples collected during a previous DPW survey

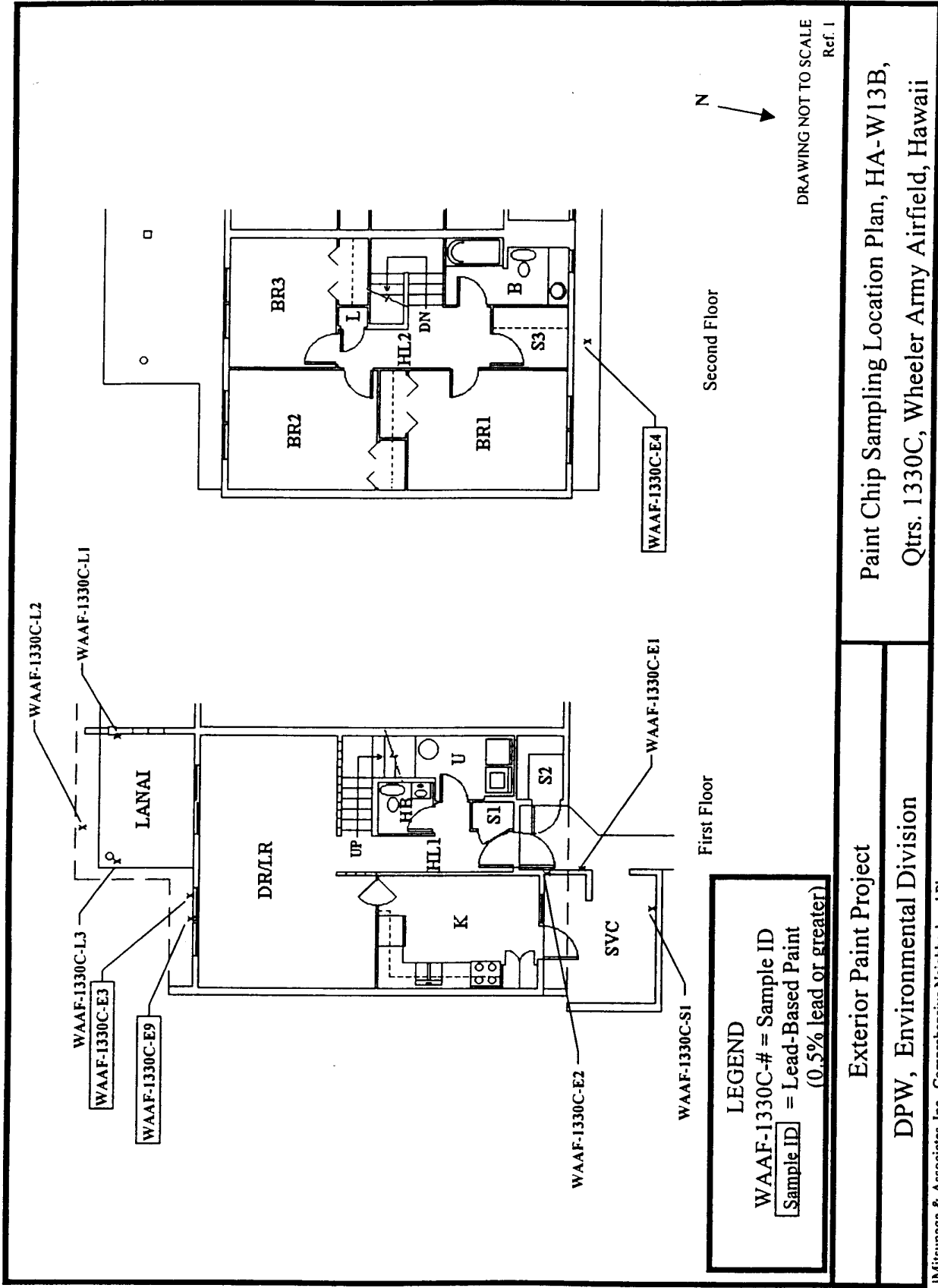
Bold Face: lead-based paint (0.5% lead or greater)

'<': indicated levels fall below laboratory detection limit

CMU: concrete masonry unit

Appendix B

Paint Chip Sample Location

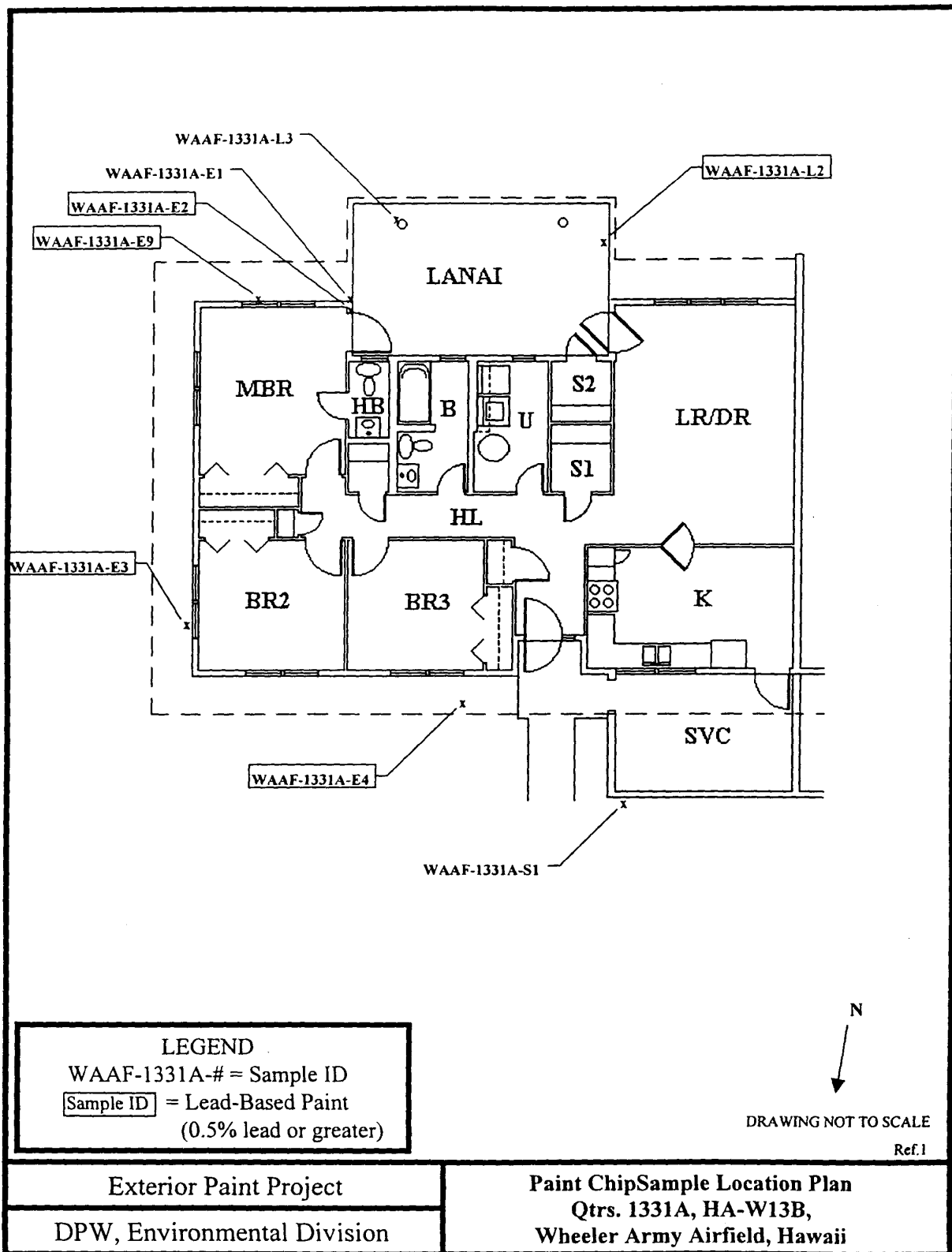


Exterior Paint Project

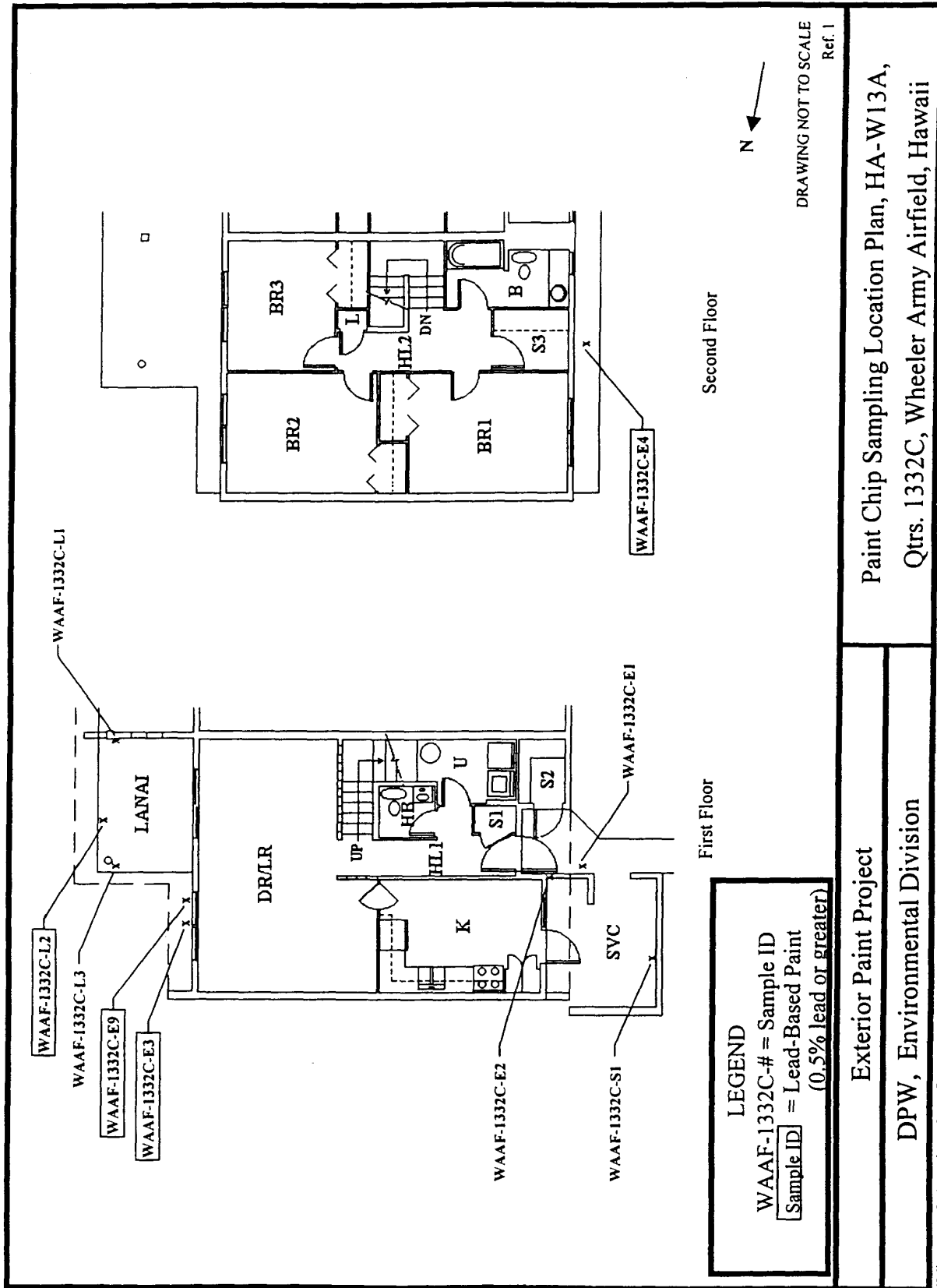
DPW, Environmental Division

Paint Chip Sampling Location Plan, HA-W13B,
Qtrs. 1330C, Wheeler Army Airfield, Hawaii

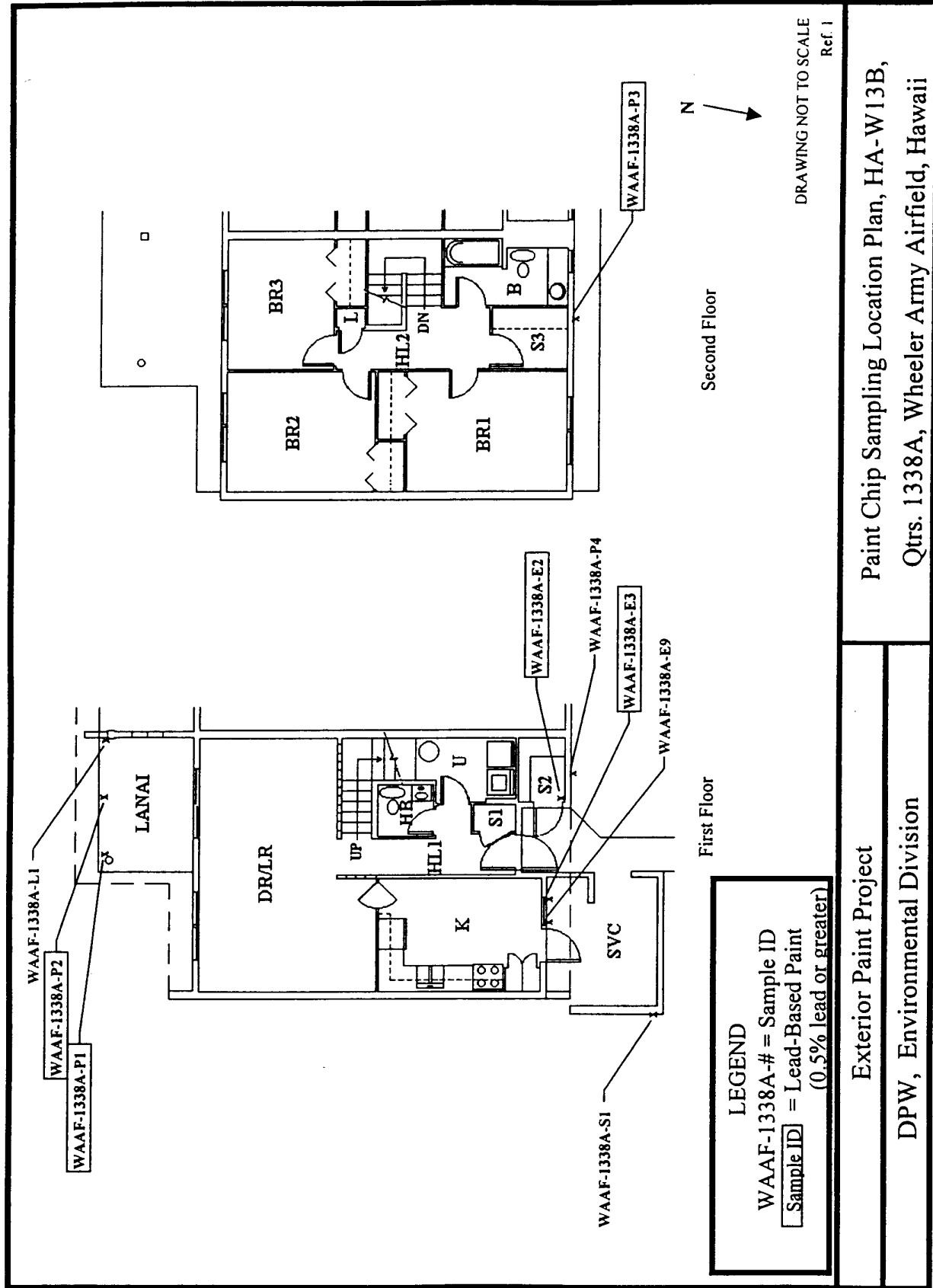
¹Mitsunaga & Associates, Inc., Comprehensive Neighborhood Plans,
Schofield Barracks, Military Housing Master Plan for Oahu



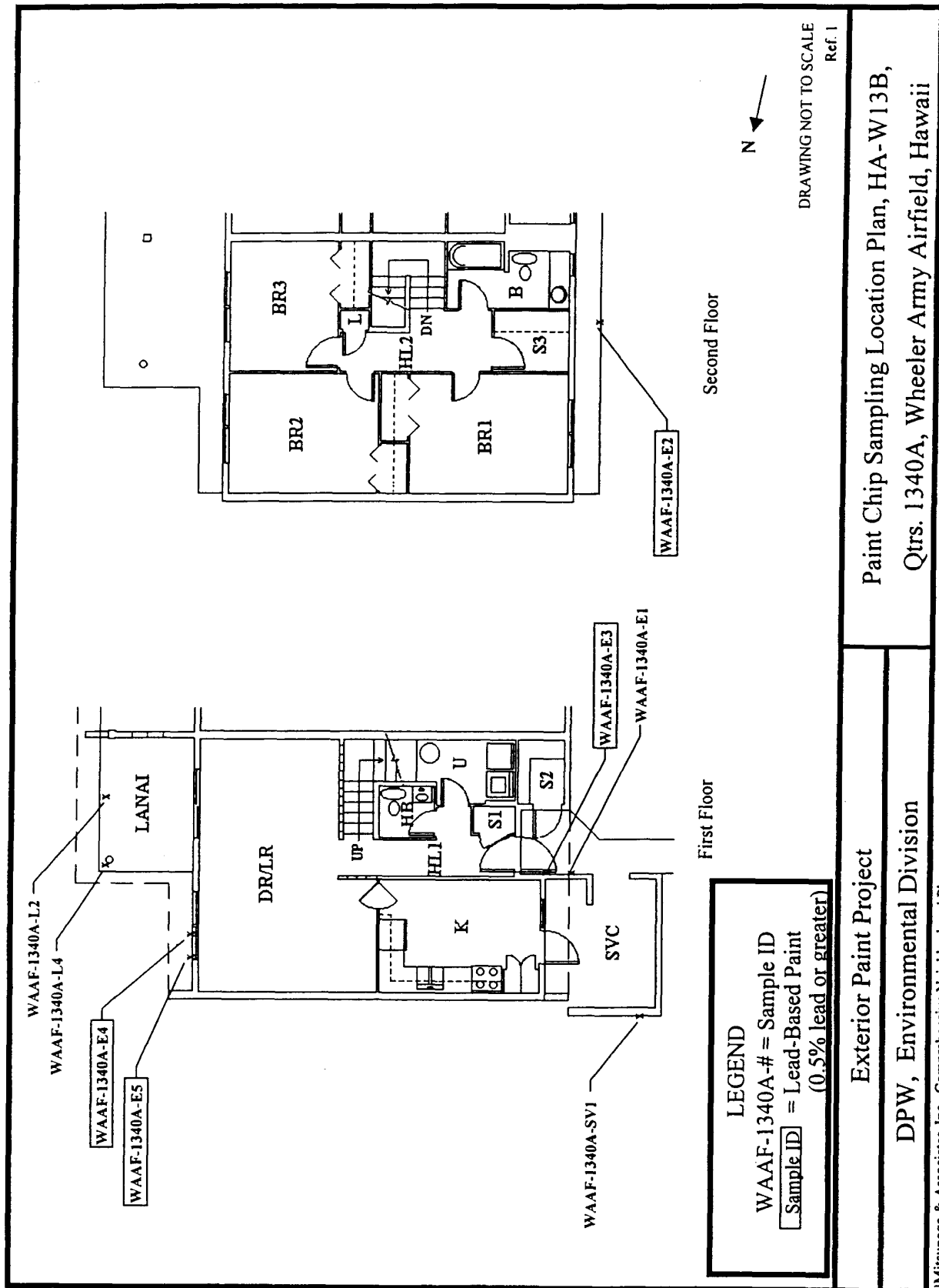
¹Mitsunaga & Associates, Inc., Comprehensive Neighborhood Plans,
Schofield Barracks, Military Housing Master Plan for Oahu

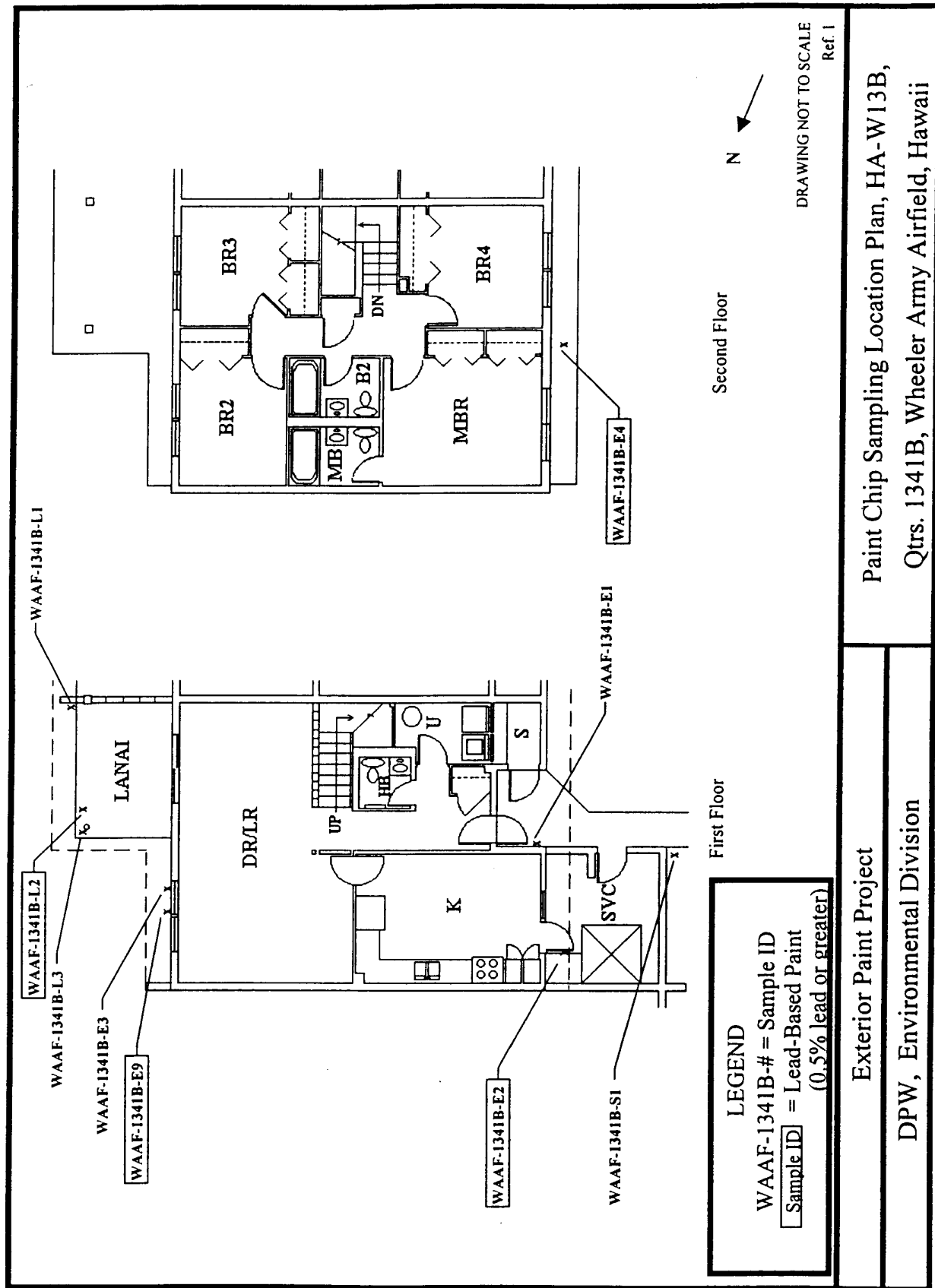


Mitsunaga & Associates, Inc., Comprehensive Neighborhood Plans,
Schofield Barracks, Military Housing Master Plan for Oahu



Mitsunaga & Associates, Inc., Comprehensive Neighborhood Plans,
Schofield Barracks, Military Housing Master Plan for Oahu





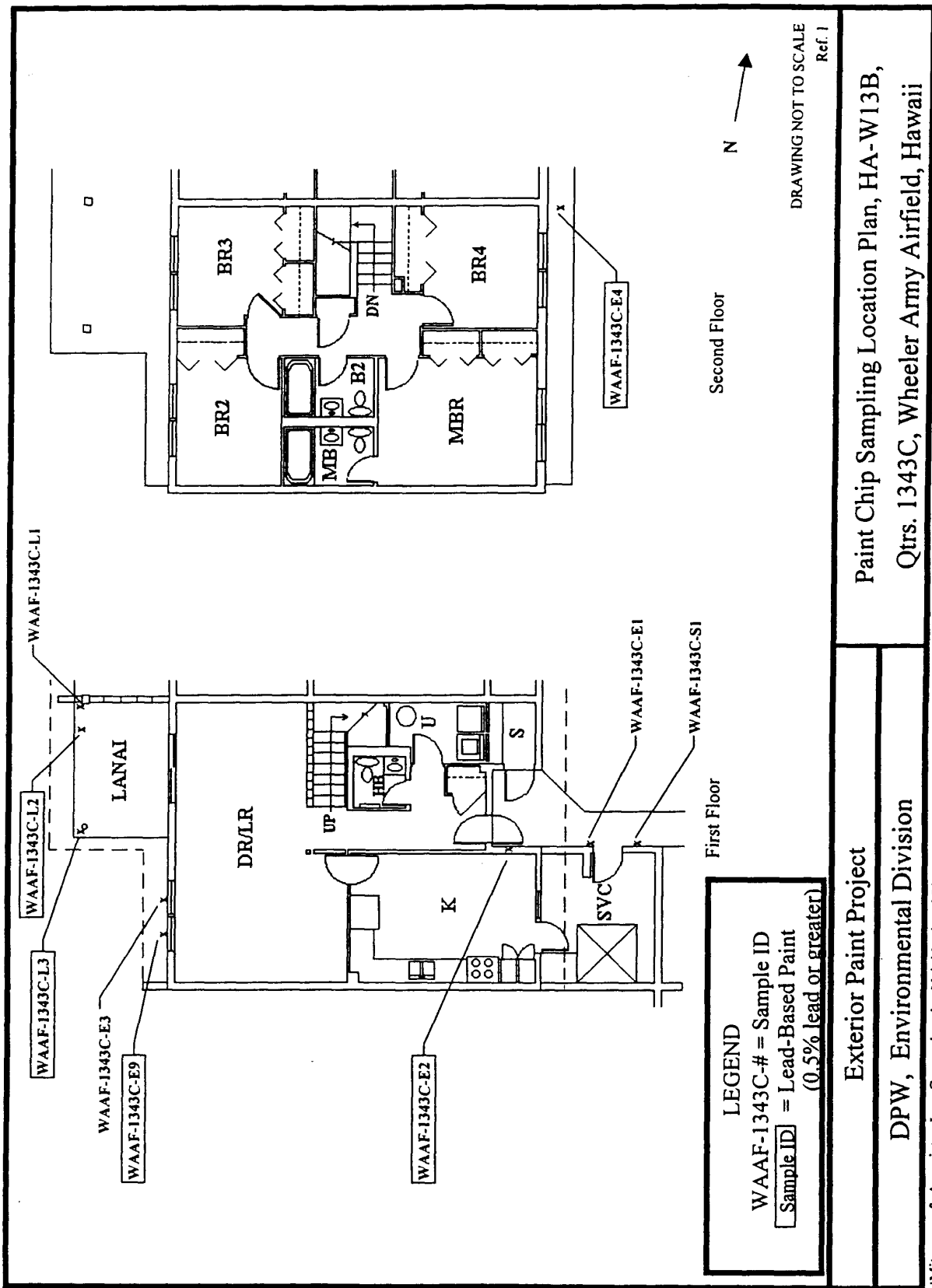
Exterior Paint Project

DPW, Environmental Division

Paint Chip Sampling Location Plan, HA-W13B,

Qtrs. 1341B, Wheeler Army Airfield, Hawaii

Mitsunaga & Associates, Inc.; Comprehensive Neighborhood Plans,
 Schofield Barracks, Military Housing Master Plan for Oahu

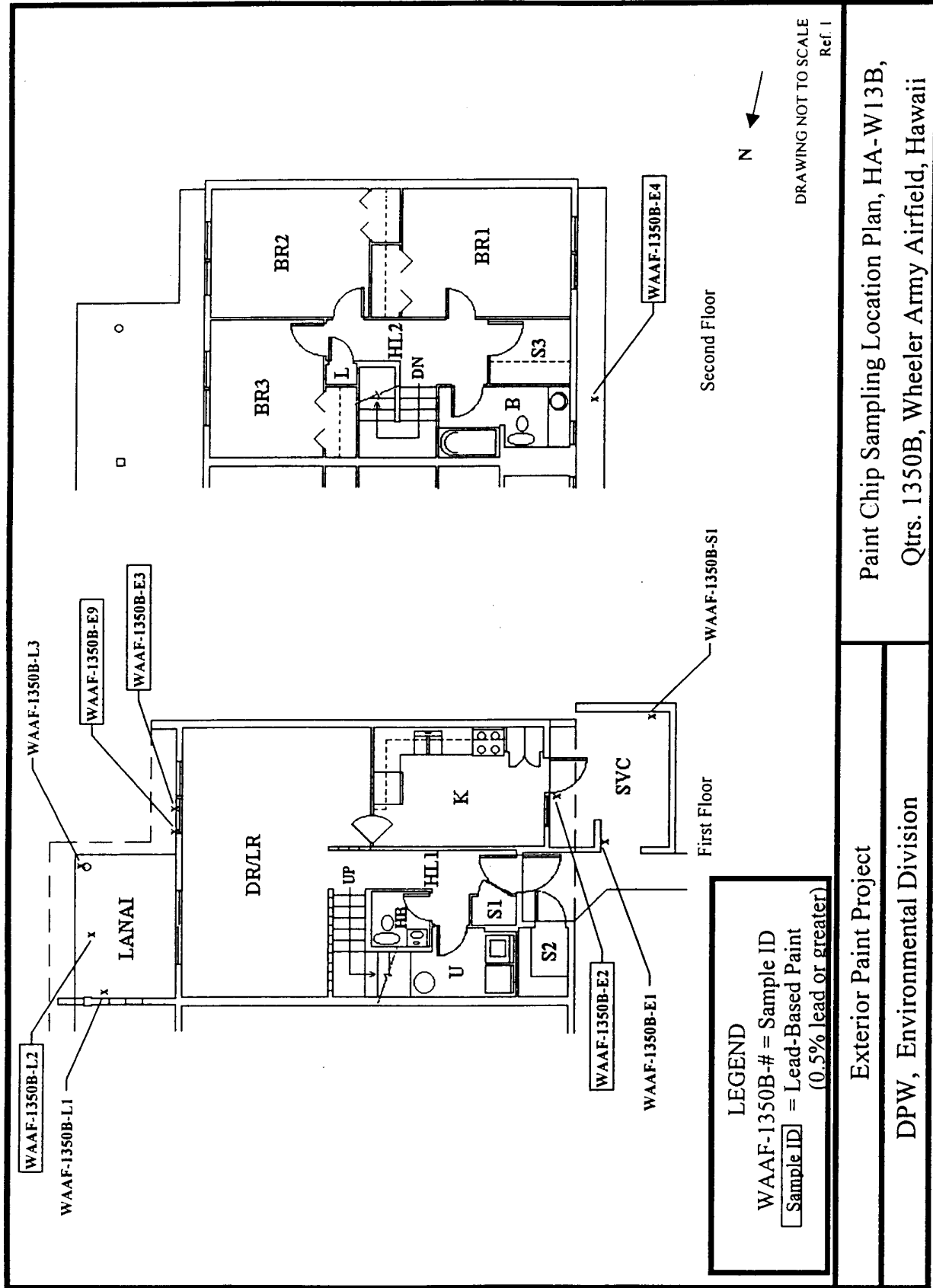


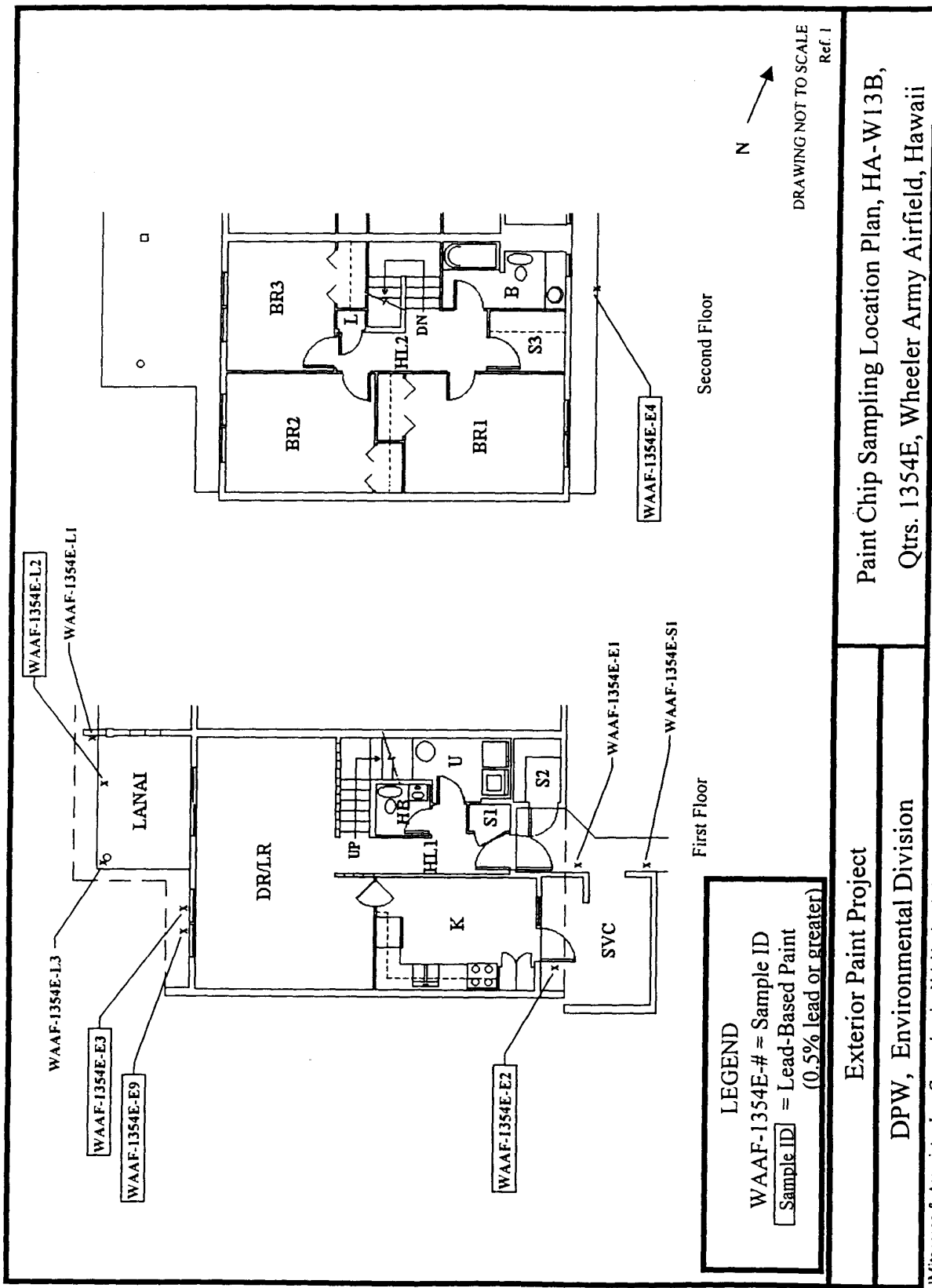
Exterior Paint Project

DPW, Environmental Division

Paint Chip Sampling Location Plan, HA-W13B,
Qtrs. 1343C, Wheeler Army Airfield, Hawaii

Mitsunaga & Associates, Inc., Comprehensive Neighborhood Plans,
Schofield Barracks, Military Housing Master Plan for Oahu



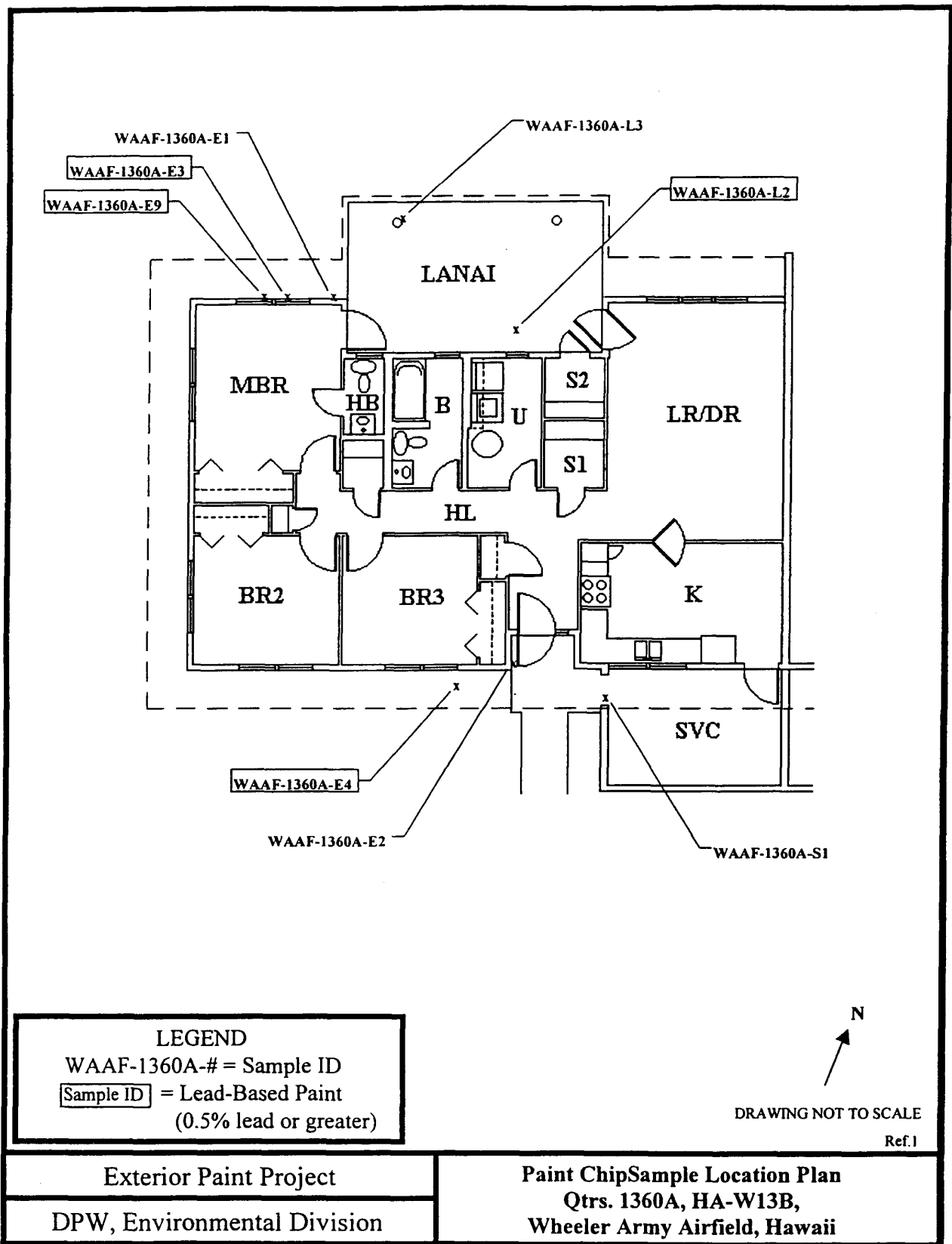


Exterior Paint Project

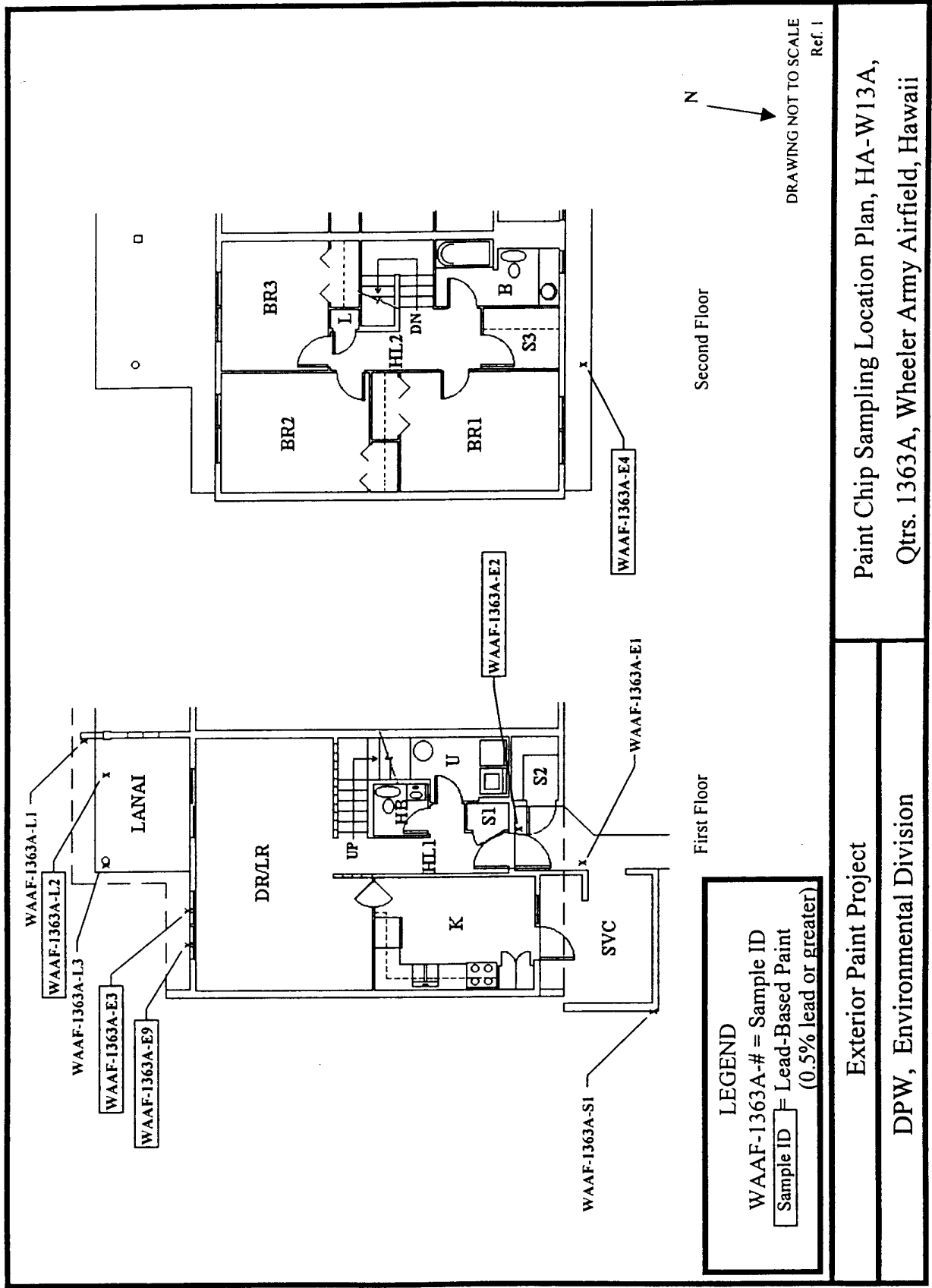
DPW, Environmental Division

Paint Chip Sampling Location Plan, HA-W13B,
Qtrs. 1354E, Wheeler Army Airfield, Hawaii

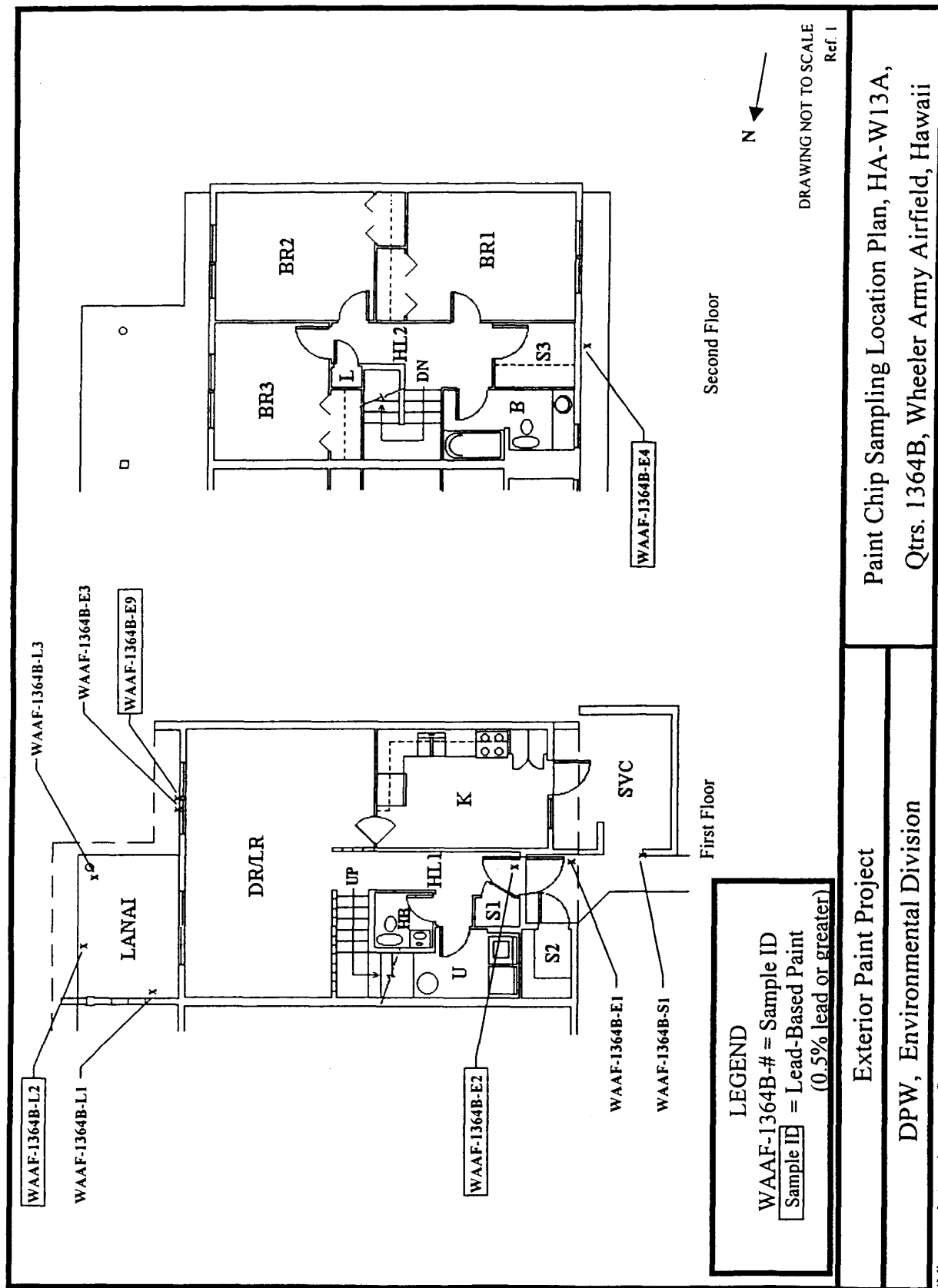
Mitsunaga & Associates, Inc., Comprehensive Neighborhood Plans,
Schofield Barracks, Military Housing Master Plan for Oahu

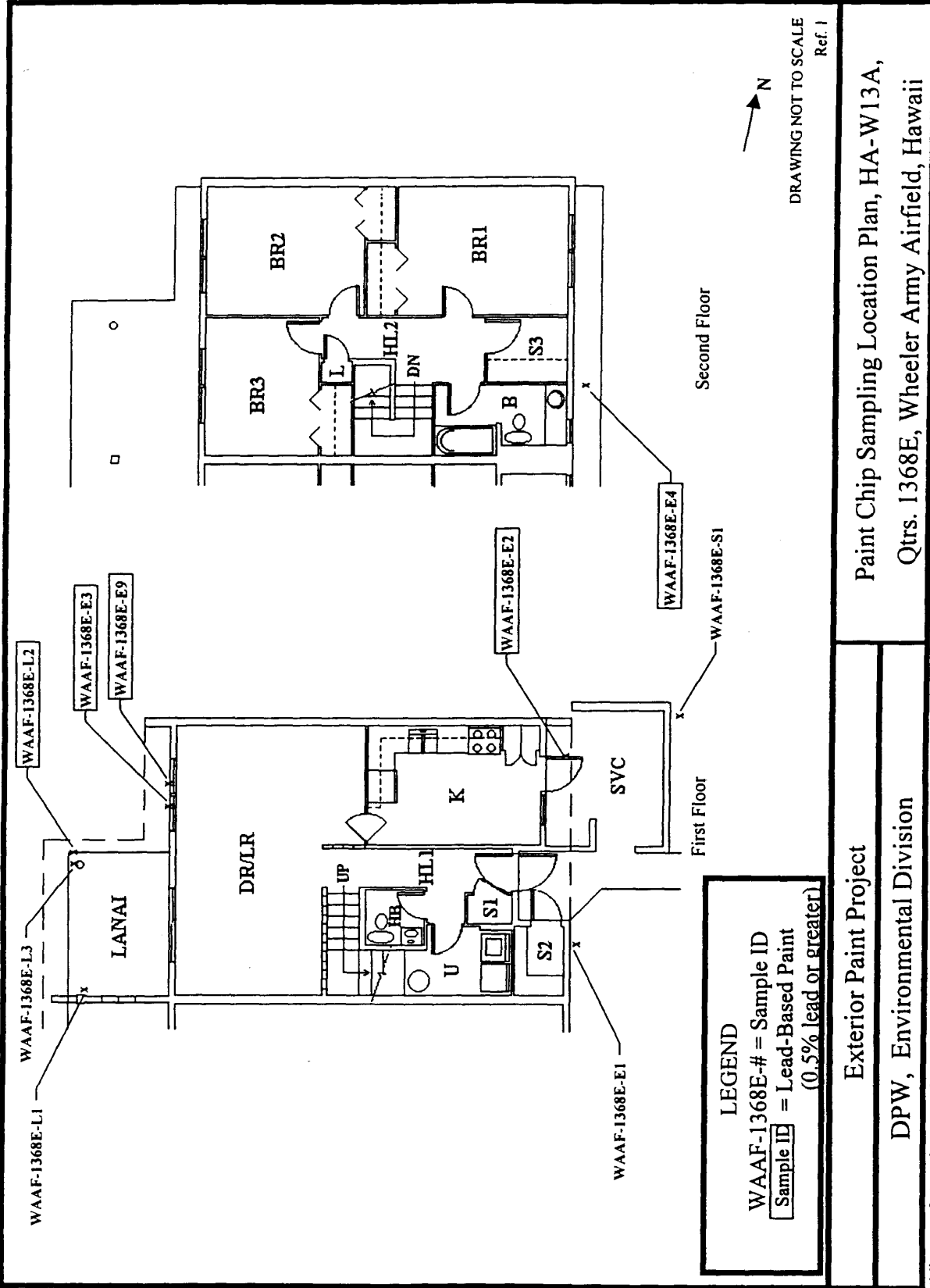


¹Mitsunaga & Associates, Inc., Comprehensive Neighborhood Plans,
Schofield Barracks, Military Housing Master Plan for Oahu

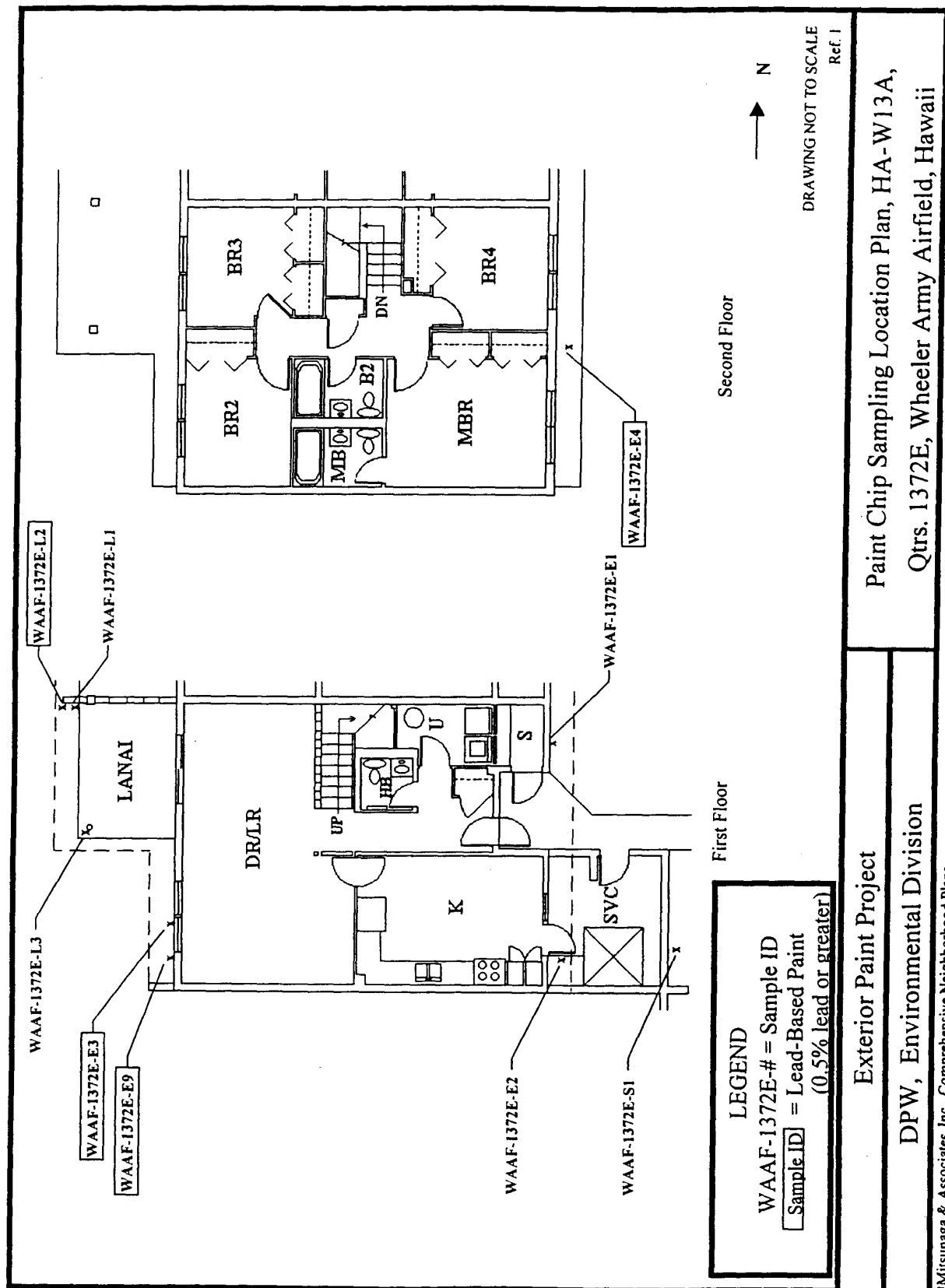


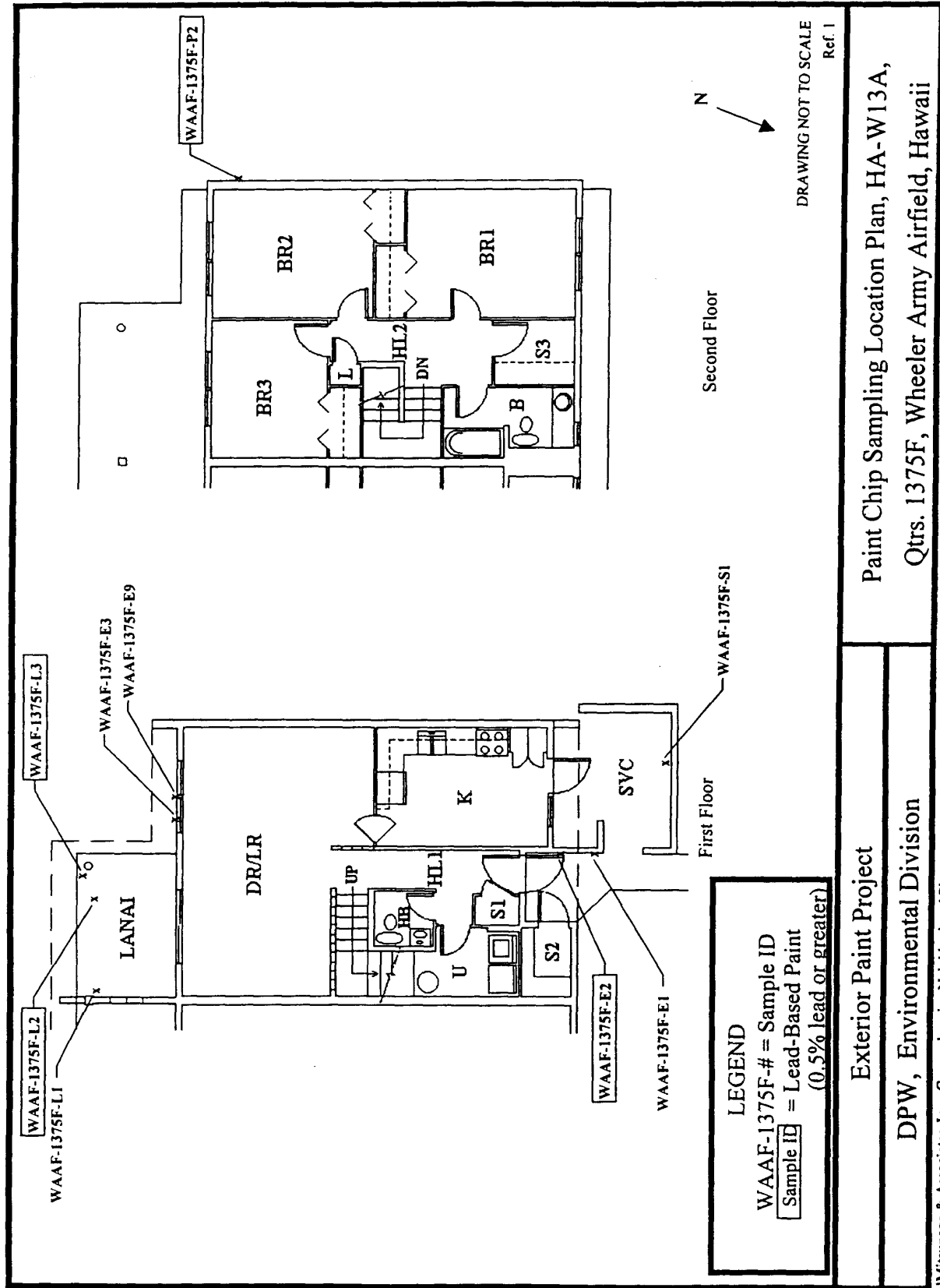
Mitsunaga & Associates, Inc., Comprehensive Neighborhood Plans,
 Schofield Barracks, Military Housing Master Plan for Oahu





¹Mitsunaga & Associates, Inc., Comprehensive Neighborhood Plans,
Schofield Barracks, Military Housing Master Plan for Oahu

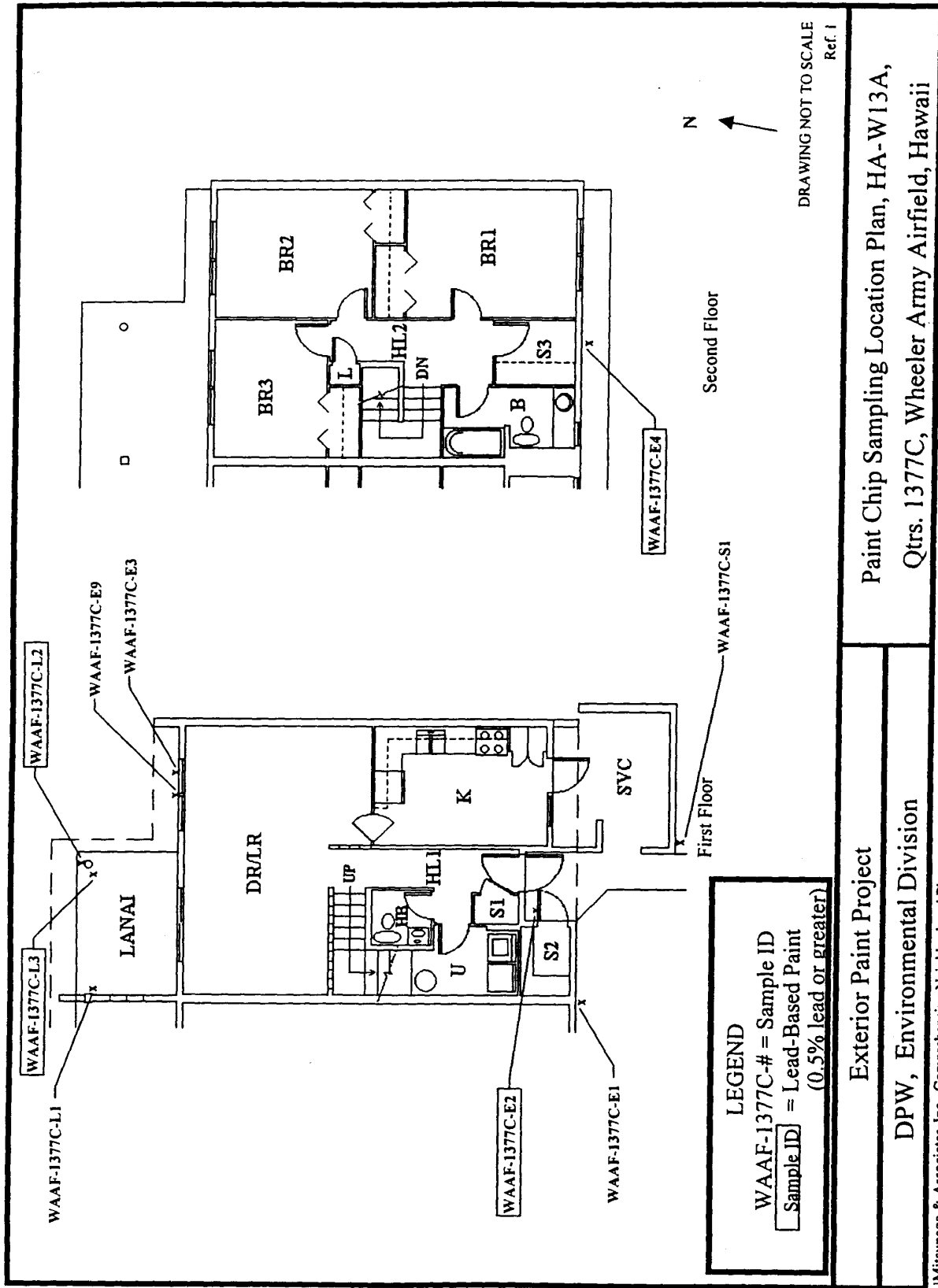


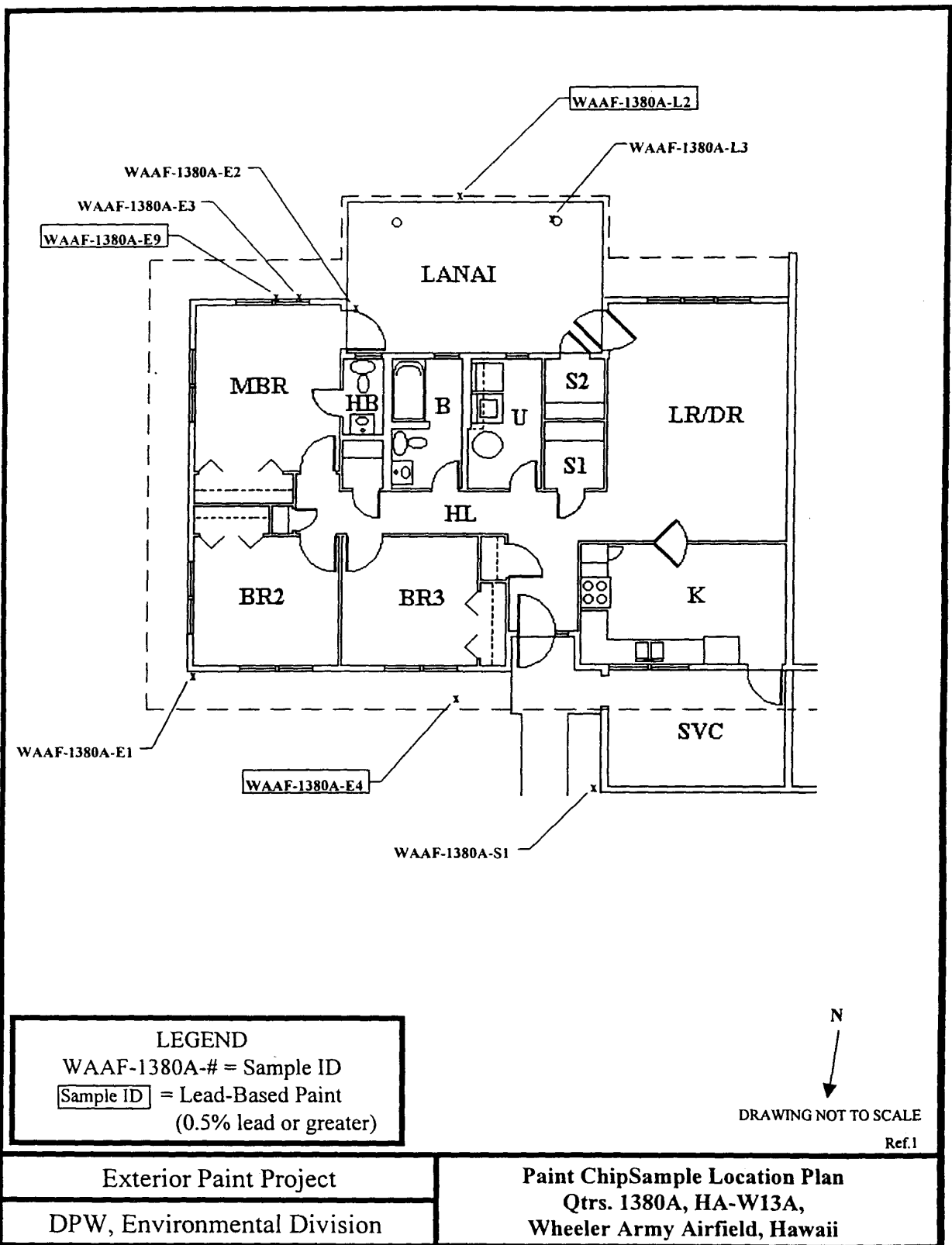


Paint Chip Sampling Location Plan, HA-W13A,
Qtrs. 1375F, Wheeler Army Airfield, Hawaii

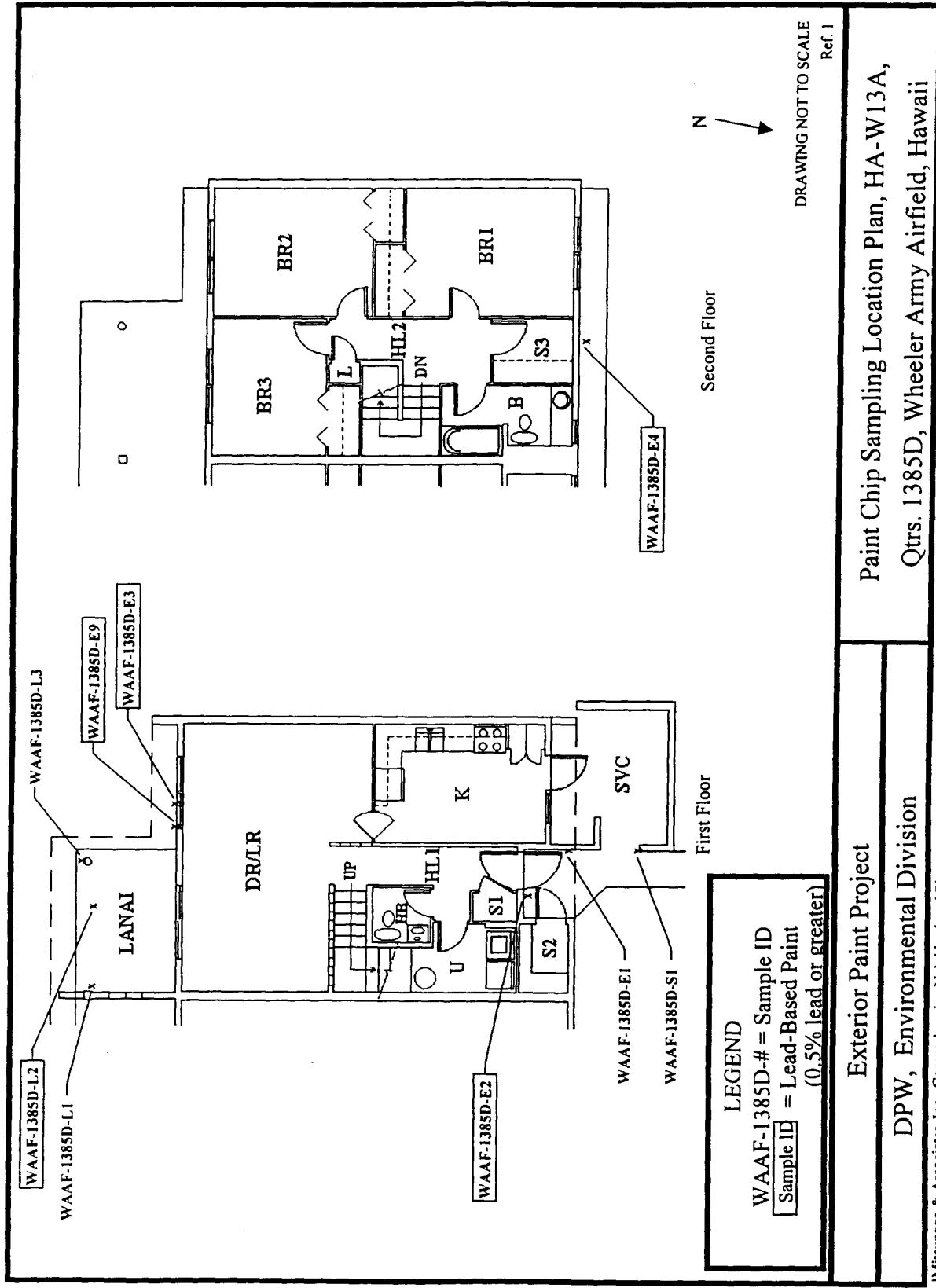
Exterior Paint Project
DPW, Environmental Division

Mitsunaga & Associates, Inc., Comprehensive Neighborhood Plans,
Schofield Barracks, Military Housing Master Plan for Oahu





¹Mitsunaga & Associates, Inc., Comprehensive Neighborhood Plans,
Schofield Barracks, Military Housing Master Plan for Oahu

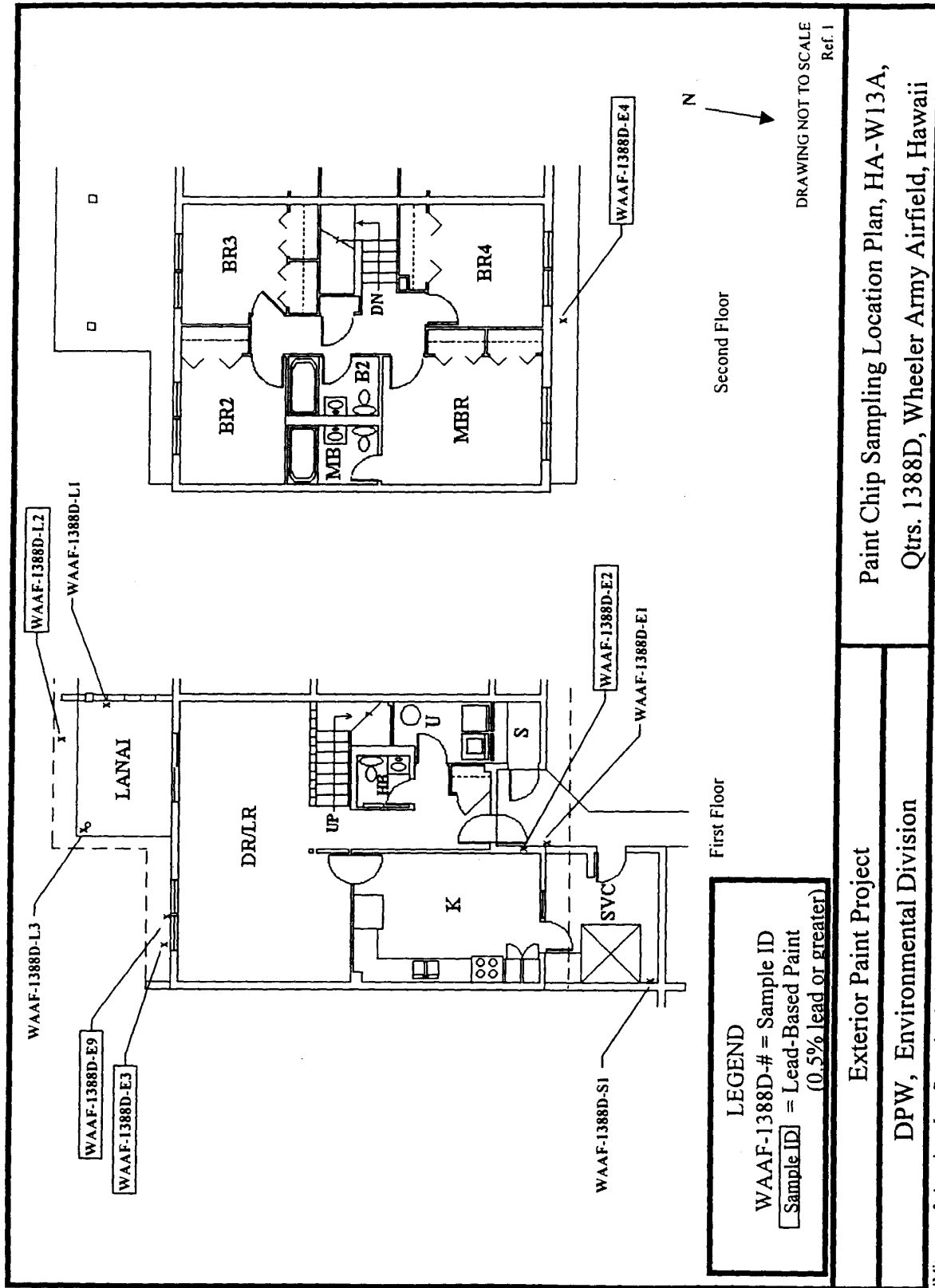


Exterior Paint Project

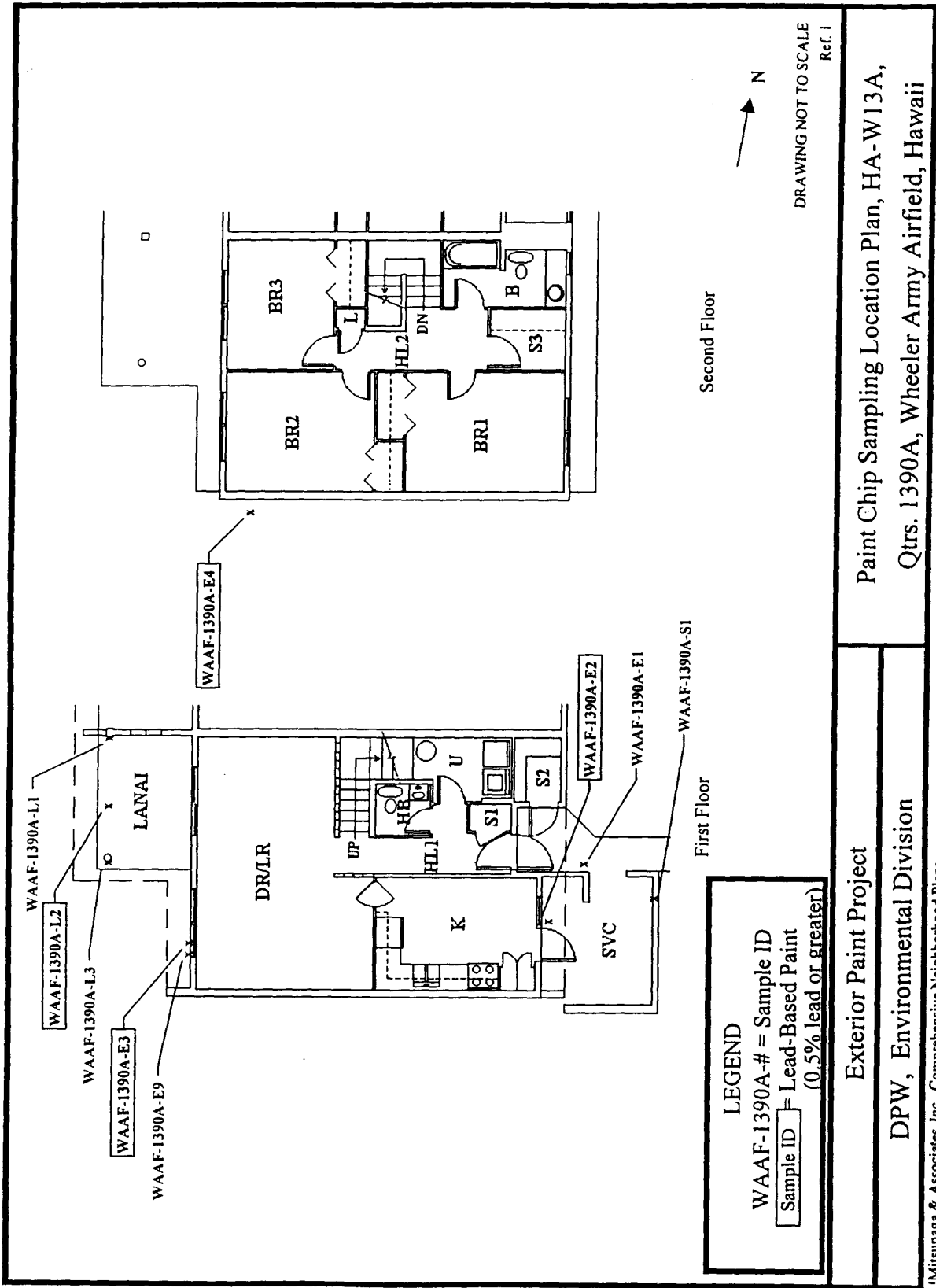
DPW, Environmental Division

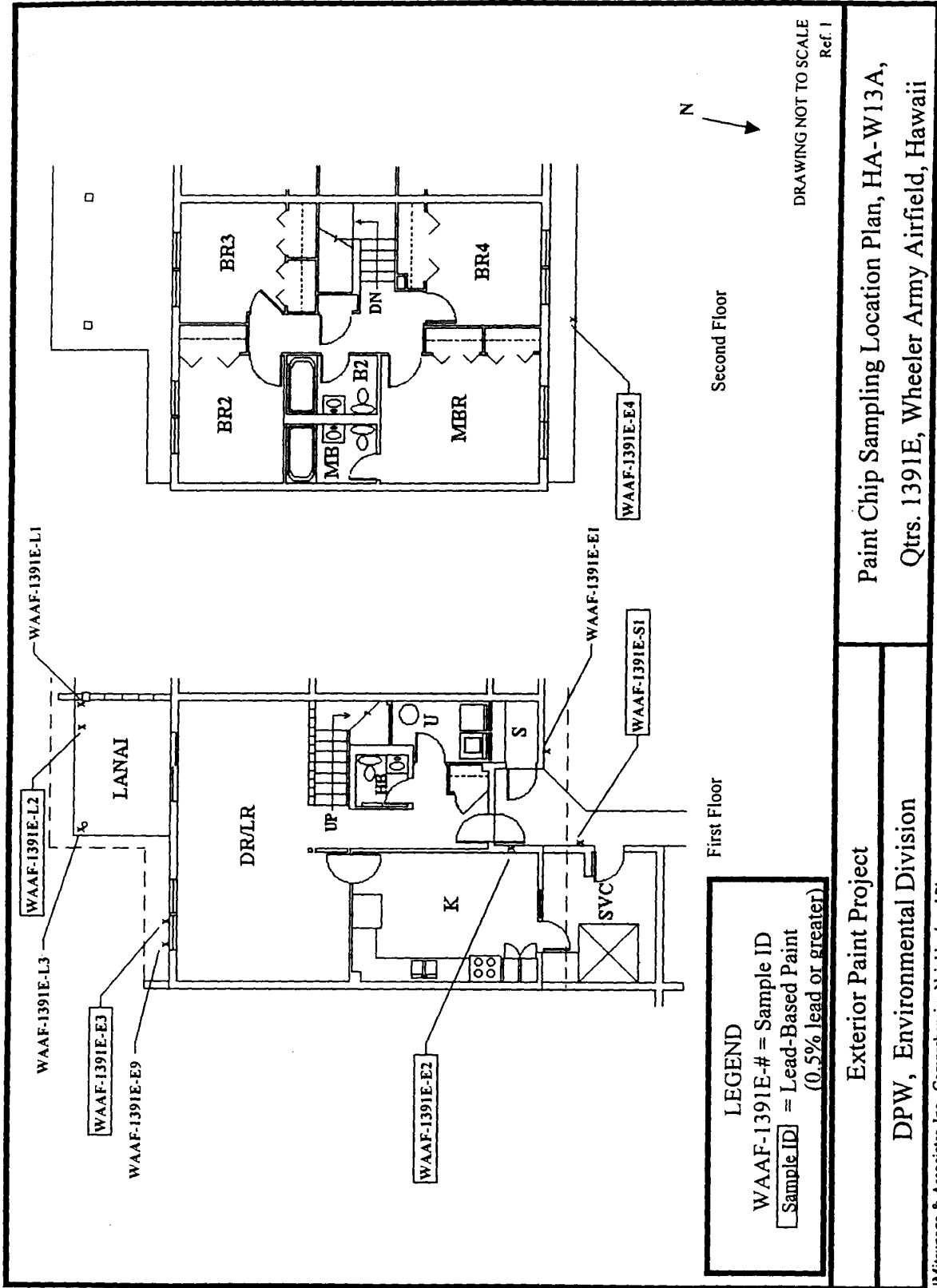
Paint Chip Sampling Location Plan, HA-W13A,
Qtrs. 1385D, Wheeler Army Airfield, Hawaii

Mitsunaga & Associates, Inc., Comprehensive Neighborhood Plans,
Schofield Barracks, Military Housing Master Plan for Oahu



Mitsunaga & Associates, Inc., Comprehensive Neighborhood Plans,
Schofield Barracks, Military Housing Master Plan for Oahu





Mitsunaga & Associates Inc. Comprehensive Neighborhood Plans,
Schofield Barracks, Military Housing Master Plan for Oahu

Appendix C

Lead Analytical Laboratory Results



Client: US Army Garrison Hawaii
 Address: Director of Public Works (DPW),
 Environmental Division - Building 105
 APVG-GWV
 Wheeler Army Airfield, Hawaii 96851-5000
 Attention: Sieve Ozoa

Job Name: Batch 000503-1
 Job Location: Not Provided
 Job Number: DOH0002 (CLINH-0002AF/172)
 P.O. Number: DAPC50-00-D-0007

Chain Of Custody: 70252
 Date Analyzed: 5/16/00
 Person Submitting: Dale Kanchisa
 Report Date: 17-May-00

Page 1 of 10

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft ²)	Reporting Limit	Final Result	Comments
0033898	WAAF-1388D-E1	Flame	Paint Chip	0.05	N/A	0.05 %Pb	< 0.05 %Pb	
0033899	WAAF-1388D-F2	Flame	Paint Chip	0.05	N/A	0.05 %Pb	1.35 %Pb	
0033900	WAAF-1388D-E3	Flame	Paint Chip	0.05	N/A	0.05 %Pb	0.57 %Pb	
0033901	WAAF-1388D-F4	Flame	Paint Chip	0.05	N/A	0.05 %Pb	5.88 %Pb	
0033902	WAAF-1388D-E9	Flame	Paint Chip	0.05	N/A	0.05 %Pb	1.00 %Pb	
0033903	WAAF-1388D-L1	Flame	Paint Chip	0.05	N/A	0.05 %Pb	< 0.05 %Pb	
0033904	WAAF-1388D-L2	Flame	Paint Chip	0.05	N/A	0.05 %Pb	7.98 %Pb	
0033905	WAAF-1388D-L3	Flame	Paint Chip	0.05	N/A	0.05 %Pb	0.10 %Pb	
0033906	WAAF-1388D-S1	Flame	Paint Chip	0.05	N/A	0.05 %Pb	0.06 %Pb	
0033907	WAAF-1375F-E1	Flame	Paint Chip	0.05	N/A	0.05 %Pb	< 0.05 %Pb	
0033908	WAAF-1375F-E2	Flame	Paint Chip	0.05	N/A	0.05 %Pb	4.00 %Pb	
0033909	WAAF-1375F-E3	Flame	Paint Chip	0.05	N/A	0.05 %Pb	< 0.05 %Pb	
0033910	WAAF-1375F-E9	Flame	Paint Chip	0.05	N/A	0.05 %Pb	0.22 %Pb	
0033911	WAAF-1375F-L1	Flame	Paint Chip	0.05	N/A	0.05 %Pb	< 0.05 %Pb	
0033912	WAAF-1375F-L2	Flame	Paint Chip	0.05	N/A	0.05 %Pb	5.95 %Pb	
0033913	WAAF-1375F-L3	Flame	Paint Chip	0.05	N/A	0.05 %Pb	1.21 %Pb	
0033914	WAAF-1375F-S1	Flame	Paint Chip	0.05	N/A	0.05 %Pb	< 0.05 %Pb	
0033915	WAAF-1330C-E1	Flame	Paint Chip	0.05	N/A	0.05 %Pb	0.13 %Pb	
0033916	WAAF-1330C-E2	Flame	Paint Chip	0.05	N/A	0.05 %Pb	< 0.05 %Pb	

This report applies only to the sample, or samples, investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a mutual protection to clients, the public and these Laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization from us. Sample types, locations and collection protocols are based upon the information provided by the persons submitting them and, unless collected by personnel of these Laboratories, we expressly disclaim any knowledge and liability for the accuracy and completeness of this information. Residual sample material will be discarded in accordance with the appropriate regulatory guidelines, unless otherwise requested by the client. NYLAP Accreditation

NYLAP is a registered trademark of the National Voluntary Laboratory Accreditation Program (NVLAP) of the U.S. Department of Commerce, National Institute of Standards and Technology. All rights reserved. AMA Analytical Services, Inc.

CERTIFICATE OF ANALYSIS

Client: US Army Garrison Hawaii Job Name: Batch 000503-1 Chain Of Custody: 70252
Address: Director of Public Works (DPW), Environmental Division - Building 105 APVCI-GWV Job Location: Not Provided Date Analyzed: 5/16/00
Job Number: 96857-5000 Job Number: DXW6002 (CLIN#-0002AF172) Person Submitting: Date Kanichisa
P.O. Number: DAPC50-00-D-0007 Report Date: 17-May-00
Attention: Steve Ozona

Page 2 of 10

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft ²)	Reporting Limit	Final Result	Comments
0033917	WAAF-1330C-E3	Flame	Paint Chip	0.05	N/A	0.05 %Pb	3.23 %Pb	
0033918	WAAF-1330C-E4	Flame	Paint Chip	0.05	N/A	0.05 %Pb	12.26 %Pb	
0033919	WAAF-1330C-E9	Flame	Paint Chip	0.05	N/A	0.05 %Pb	2.21 %Pb	
0033920	WAAF-1330C-L1	Flame	Paint Chip	0.05	N/A	0.05 %Pb	< 0.05 %Pb	
0033921	WAAF-1330C-L2	Flame	Paint Chip	0.05	N/A	0.05 %Pb	0.47 %Pb	
0033922	WAAF-1330C-L3	Flame	Paint Chip	0.05	N/A	0.05 %Pb	0.14 %Pb	
0033923	WAAF-1330C-S1	Flame	Paint Chip	0.05	N/A	0.05 %Pb	0.09 %Pb	
0033924	WAAF-1332C-E1	Flame	Paint Chip	0.05	N/A	0.05 %Pb	0.13 %Pb	
0033925	WAAF-1332C-E2	Flame	Paint Chip	0.05	N/A	0.05 %Pb	0.47 %Pb	
0033926	WAAF-1332C-E3	Flame	Paint Chip	0.05	N/A	0.05 %Pb	1.66 %Pb	
0033927	WAAF-1332C-E4	Flame	Paint Chip	0.05	N/A	0.05 %Pb	12.50 %Pb	
0033928	WAAF-1332C-E9	Flame	Paint Chip	0.05	N/A	0.05 %Pb	5.07 %Pb	
0033929	WAAF-1332C-L1	Flame	Paint Chip	0.05	N/A	0.05 %Pb	< 0.05 %Pb	
0033930	WAAF-1332C-L2	Flame	Paint Chip	0.05	N/A	0.05 %Pb	0.66 %Pb	
0033931	WAAF-1332C-L3	Flame	Paint Chip	0.05	N/A	0.05 %Pb	0.19 %Pb	
0033932	WAAF-1332C-S1	Flame	Paint Chip	0.05	N/A	0.05 %Pb	< 0.05 %Pb	
0033933	WAAF-1360A-E1	Flame	Paint Chip	0.05	N/A	0.05 %Pb	< 0.05 %Pb	
0033934	WAAF-1360A-E2	Flame	Paint Chip	0.05	N/A	0.05 %Pb	< 0.05 %Pb	
0033935	WAAF-1360A-E3	Flame	Paint Chip	0.05	N/A	0.05 %Pb	3.82 %Pb	

This report applies only to the sample, or samples, investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a mutual protection to clients, the public and these Laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization from us. Sample types, locations and collection protocols are based upon the information provided by the persons submitting them and, unless collected by personnel of these Laboratories, we expressly disclaim any knowledge and liability for the accuracy and completeness of this information. Residual sample material will be discarded in accordance with the appropriate regulatory guidelines, unless otherwise requested by the client. NVLAP Accreditation applies only to polarized light microscopy of bulk samples and transmission electron microscopy of air samples.

An AIHA (#8863), NVLAP (#1143), & New York ELAP (#10920) Accredited Laboratory
4475 Forbes Blvd., Lanham, MD 20706-7011

All rights reserved. AMA Analytical Services, Inc.

Client: US Army Garrison Hawaii
Address: Director of Public Works (DPW),
 Environmental Division - Building 105
 APVG-GWV

Job Name: Batch 000503-1
Job Location: Not Provided

Chain Of Custody: 70252
Date Analyzed: 5/16/00

Job Number: Wheeler Army Airfield, Hawaii 96857-5000

Job Number: DOM0002 (CLIN# 0002AF/172)

Person Submitting: Dale Kanehisa
Report Date: 17-May-00

Attention: Steve Ozoa

P.O. Number: DAPC50-00-D-0007

Page 3 of 10

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft ²)	Reporting Limit	Final Result	Comments
0033936	WAAF-1360A-E4	Flame	Paint Chip	0.05	N/A	0.05	9.53	%Pb
0033937	WAAF-1360A-E9	Flame	Paint Chip	0.05	N/A	0.05	5.45	%Pb
0033938	WAAF-1360A-L2	Flame	Paint Chip	0.05	N/A	0.05	4.64	%Pb
0033939	WAAF-1360A-L3	Flame	Paint Chip	0.05	N/A	0.05	0.22	%Pb
0033940	WAAF-1360A-S1	Flame	Paint Chip	0.05	N/A	0.05	< 0.05	%Pb
0033941	WAAF-1364B-E1	Flame	Paint Chip	0.05	N/A	0.05	< 0.05	%Pb
0033942	WAAF-1364B-E2	Flame	Paint Chip	0.05	N/A	0.05	1.87	%Pb
0033943	WAAF-1364B-E3	Flame	Paint Chip	0.05	N/A	0.05	0.21	%Pb
0033944	WAAF-1364B-E4	Flame	Paint Chip	0.05	N/A	0.05	4.72	%Pb
0033945	WAAF-1364B-E9	Flame	Paint Chip	0.05	N/A	0.05	0.84	%Pb
0033946	WAAF-1364B-L1	Flame	Paint Chip	0.05	N/A	0.05	< 0.05	%Pb
0033947	WAAF-1364B-L2	Flame	Paint Chip	0.05	N/A	0.05	8.51	%Pb
0033948	WAAF-1364B-L3	Flame	Paint Chip	0.05	N/A	0.05	0.19	%Pb
0033949	WAAF-1364B-S1	Flame	Paint Chip	0.05	N/A	0.05	< 0.05	%Pb
0033950	WAAF-1368E-F1	Flame	Paint Chip	0.05	N/A	0.05	< 0.05	%Pb
0033951	WAAF-1368E-E2	Flame	Paint Chip	0.05	N/A	0.05	6.31	%Pb
0033952	WAAF-1368E-E3	Flame	Paint Chip	0.05	N/A	0.05	2.83	%Pb
0033953	WAAF-1368E-E4	Flame	Paint Chip	0.05	N/A	0.05	4.53	%Pb
0033954	WAAF-1368E-E9	Flame	Paint Chip	0.05	N/A	0.05	3.56	%Pb

This report applies only to the sample, or samples, investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a mutual protection to clients, the public and these Laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization from us. Sample types, locations and collection protocols are based upon the information provided by the persons submitting them and, unless collected by personnel of these Laboratories, we expressly disclaim any knowledge and liability for the accuracy and completeness of this information. Residual sample material will be discarded in accordance with the appropriate regulatory guidelines, unless otherwise requested by the client. NVLAP Accreditation applies only to polarized light microscopy of bulk samples and transmission electron microscopy of air samples.

An AIHA (#8863), NVLAP (#1143), & New York ELAP (#10920) Accredited Laboratory
 4475 Forbes Blvd., Lanham, MD 20706-7011 410-761-0000

All rights reserved. AMA Analytical Services, Inc.



Analytical Services, Inc.

Electron & Optical Microscopy Services

CERTIFICATE OF ANALYSIS

Client: US Army Garrison Hawaii
Address: Director of Public Works (DPW),
Environmental Division - Building 105
APVG-GWV

Job Name: Batch 000503-1
Job Location: Not Provided

Chain Of Custody: 70252

Date Analyzed: 5/16/00

Wheeler Army Airfield, Hawaii 96857-5000

Job Number: DOW0002 (CLIN-0002AF172)

Person Submitting: Date Kanchisa

P.O. Number: DAPCS0-00-D-0007

Report Date: 17-May-00

Attention: Steve Ozoa

Page 4 of 10

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft ²)	Reporting Limit	Final Result	Comments
0033955	WAAF-1368E-L1	Flame	Paint Chip	0.05	N/A	0.05	< 0.05	%Pb
0033956	WAAF-1368E-L2	Flame	Paint Chip	0.05	N/A	0.05	8.14	%Pb
0033957	WAAF-1368E-L3	Flame	Paint Chip	0.05	N/A	0.05	0.43	%Pb
0033958	WAAF-1368E-S1	Flame	Paint Chip	0.05	N/A	0.05	< 0.05	%Pb
0033959	WAAF-1341B-E1	Flame	Paint Chip	0.05	N/A	0.05	< 0.05	%Pb
0033960	WAAF-1341B-E2	Flame	Paint Chip	0.05	N/A	0.05	1.45	%Pb
0033961	WAAF-1341B-E3	Flame	Paint Chip	0.05	N/A	0.05	< 0.05	%Pb
0033962	WAAF-1341B-E4	Flame	Paint Chip	0.05	N/A	0.05	2.14	%Pb
0033963	WAAF-1341B-E9	Flame	Paint Chip	0.05	N/A	0.05	7.13	%Pb
0033964	WAAF-1341B-L1	Flame	Paint Chip	0.05	N/A	0.05	< 0.05	%Pb
0033965	WAAF-1341B-L2	Flame	Paint Chip	0.05	N/A	0.05	7.59	%Pb
0033966	WAAF-1341B-L3	Flame	Paint Chip	0.05	N/A	0.05	0.25	%Pb
0033967	WAAF-1341B-S1	Flame	Paint Chip	0.05	N/A	0.05	< 0.05	%Pb
0033968	WAAF-1363A-E1	Flame	Paint Chip	0.05	N/A	0.05	< 0.05	%Pb
0033969	WAAF-1363A-E2	Flame	Paint Chip	0.05	N/A	0.05	4.75	%Pb
0033970	WAAF-1363A-E3	Flame	Paint Chip	0.05	N/A	0.05	3.93	%Pb
0033971	WAAF-1363A-E4	Flame	Paint Chip	0.05	N/A	0.05	4.06	%Pb
0033972	WAAF-1363A-E9	Flame	Paint Chip	0.05	N/A	0.05	1.74	%Pb
0033973	WAAF-1363A-L1	Flame	Paint Chip	0.05	N/A	0.05	< 0.05	%Pb

This report applies only to the sample, or samples, investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a mutual protection to clients, the public and these Laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization from us. Sample types, locations and collection protocols are based upon the information provided by the persons submitting them and, unless collected by personnel of these Laboratories, we expressly disclaim any knowledge and liability for the accuracy and completeness of this information. Residual sample material will be discarded in accordance with the appropriate regulatory guidelines, unless otherwise requested by the client. NVLAP Accreditation applies only to polarized light microscopy of bulk samples and transmission electron microscopy of air samples.

An AIHA (#8863), NVLAP (#1143), & New York ELAP (#10920) Accredited Laboratory
4475 Forbes Blvd., 11th Floor, Landover, MD 20785-4040 • Toll Free (800) 346-0941 • Fax (301) 459-2640

All rights reserved. AMA Analytical Services, Inc.





AMA Analytical Services, Inc.

Electron & Optical Microscopy Services

CERTIFICATE OF ANALYSIS

Client: US Army Garrison Hawaii
Address: Director of Public Works (DPW),
Environmental Division - Building 105
APO (C) GWV
Wheeler Army Airfield, Hawaii 96857-5000
Attention: Steve Orzo

Job Name: Batch 000503-1
Job Location: Not Provided
Job Number: DO#0002 (CLIN#-0002AF/172)
P.O. Number: DAPC50-00-D-0007

Chain Of Custody: 70252
Date Analyzed: 5/16/00
Person Submitting: Dale Kanchisa
Report Date: 17-May-00



Page 3 of 10

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft ²)	Reporting Limit	Final Result	Comments
0033974	WAAF-1363A-L2	Flame	Paint Chip	****	N/A	0.05 %Pb	6.63 %Pb	
0033975	WAAF-1363A-L3	Flame	Paint Chip	****	N/A	0.05 %Pb	0.10 %Pb	
0033976	WAAF-1363A-S1	Flame	Paint Chip	****	N/A	0.05 %Pb	< 0.05 %Pb	
0033977	WAAF-1372E-E1	Flame	Paint Chip	****	N/A	0.05 %Pb	< 0.05 %Pb	
0033978	WAAF-1372E-E2	Flame	Paint Chip	****	N/A	0.05 %Pb	0.06 %Pb	
0033979	WAAF-1372E-E3	Flame	Paint Chip	****	N/A	0.05 %Pb	0.66 %Pb	
0033980	WAAF-1372E-E4	Flame	Paint Chip	****	N/A	0.05 %Pb	5.80 %Pb	
0033981	WAAF-1372E-L9	Flame	Paint Chip	****	N/A	0.05 %Pb	6.25 %Pb	
0033982	WAAF-1372E-L1	Flame	Paint Chip	****	N/A	0.05 %Pb	< 0.05 %Pb	
0033983	WAAF-1372E-L2	Flame	Paint Chip	****	N/A	0.05 %Pb	9.52 %Pb	
0033984	WAAF-1372E-L3	Flame	Paint Chip	****	N/A	0.05 %Pb	0.29 %Pb	
0033985	WAAF-1372E-S1	Flame	Paint Chip	****	N/A	0.05 %Pb	< 0.05 %Pb	
0033986	WAAF-1380A-E1	Flame	Paint Chip	****	N/A	0.05 %Pb	< 0.05 %Pb	
0033987	WAAF-1380A-E2	Flame	Paint Chip	****	N/A	0.05 %Pb	0.09 %Pb	
0033988	WAAF-1380A-E3	Flame	Paint Chip	****	N/A	0.05 %Pb	0.11 %Pb	
0033989	WAAF-1380A-E4	Flame	Paint Chip	****	N/A	0.05 %Pb	7.29 %Pb	
0033990	WAAF-1380A-E9	Flame	Paint Chip	****	N/A	0.05 %Pb	1.54 %Pb	
0033991	WAAF-1380A-L2	Flame	Paint Chip	****	N/A	0.05 %Pb	5.06 %Pb	
0033992	WAAF-1380A-L3	Flame	Paint Chip	****	N/A	0.05 %Pb	0.26 %Pb	

This report applies only to the sample, or samples, investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a mutual protection to clients, the public and these Laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization from us. Sample types, locations and collection protocols are based upon the information provided by the persons submitting them and, unless collected by personnel of these Laboratories, we expressly disclaim any knowledge and liability for the accuracy and completeness of this information. Residual sample material will be discarded in accordance with the appropriate regulatory guidelines, unless otherwise requested by the client. NVLAP Accreditation applies only to polarized light microscopy of bulk samples and transmission electron microscopy of air samples.

All rights reserved. AMA Analytical Services, Inc.

An AIHA (#8863), NVLAP (#10920) Accredited Laboratory
4475 Forbes Blvd., Lanham, MD 20706 • (301) 459-2640 • Toll Free (800) 346-0961 • Fax (301) 459-2647



Analytical Services, Inc.

Electron & Optical Microscopy Services

CERTIFICATE OF ANALYSIS

Client: US Army Garrison Hawaii
Address: Director of Public Works (DPW),
Environmental Division - Building 105
APVG-GWV

Job Name: Batch 000503-1
Job Location: Not Provided

Chain Of Custody: 70252

Date Analyzed: 5/16/00

Job Number: 96857-5000

Job Number: DO#0002 (CLIN#-0002AF/172)

Person Submitting: Dale Kanchisa

P.O. Number: DAPC30-00-D-0007

Report Date: 17-May-00

Attention: Steve Ozoa

Page 7 of 10

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft ²)	Reporting Limit	Final Result	Comments
0034012	WAAF-1385D-F1	Flame	Paint Chip	****	N/A	0.05 %Pb	0.09 %Pb	
0034013	WAAF-1385D-F2	Flame	Paint Chip	****	N/A	0.05 %Pb	1.68 %Pb	
0034014	WAAF-1385D-F3	Flame	Paint Chip	****	N/A	0.05 %Pb	3.36 %Pb	
0034015	WAAF-1385D-F4	Flame	Paint Chip	****	N/A	0.05 %Pb	1.61 %Pb	
0034016	WAAF-1385D-F9	Flame	Paint Chip	****	N/A	0.05 %Pb	0.58 %Pb	
0034017	WAAF-1385D-L1	Flame	Paint Chip	****	N/A	0.05 %Pb	< 0.05 %Pb	
0034018	WAAF-1385D-L2	Flame	Paint Chip	****	N/A	0.05 %Pb	4.34 %Pb	
0034019	WAAF-1385D-L3	Flame	Paint Chip	****	N/A	0.05 %Pb	0.11 %Pb	
0034020	WAAF-1385D-S1	Flame	Paint Chip	****	N/A	0.05 %Pb	0.05 %Pb	
0034021	WAAF-1377C-E1	Flame	Paint Chip	****	N/A	0.05 %Pb	< 0.05 %Pb	
0034022	WAAF-1377C-E2	Flame	Paint Chip	****	N/A	0.05 %Pb	4.92 %Pb	
0034023	WAAF-1377C-E3	Flame	Paint Chip	****	N/A	0.05 %Pb	0.12 %Pb	
0034024	WAAF-1377C-E4	Flame	Paint Chip	****	N/A	0.05 %Pb	5.66 %Pb	
0034025	WAAF-1377C-L9	Flame	Paint Chip	****	N/A	0.05 %Pb	0.40 %Pb	
0034026	WAAF-1377C-L1	Flame	Paint Chip	****	N/A	0.05 %Pb	0.06 %Pb	
0034027	WAAF-1377C-L2	Flame	Paint Chip	****	N/A	0.05 %Pb	4.12 %Pb	
0034028	WAAF-1377C-L3	Flame	Paint Chip	****	N/A	0.05 %Pb	2.79 %Pb	
0034029	WAAF-1377C-S1	Flame	Paint Chip	****	N/A	0.05 %Pb	< 0.05 %Pb	
0034030	WAAF-1331A-E1	Flame	Paint Chip	****	N/A	0.05 %Pb	< 0.05 %Pb	

This report applies only to the sample, or samples, investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a mutual protection to clients, the public and these Laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization from us. Sample types, locations and collection protocols are based upon the information provided by the persons submitting them and, unless collected by personnel of these Laboratories, we expressly disclaim any knowledge and liability for the accuracy and completeness of this information. Residual sample material will be discarded in accordance with the appropriate regulatory guidelines, unless otherwise requested by the client. NVLAP Accreditation applies only to polarized light microscopy of bulk samples and transmission electron microscopy of air samples.

An AIHA (#8863), NVLAP (#10920) Accredited Laboratory
4475 Forbes Blvd., Lanham, MD 20706-(301) 459-2640-Toll Free (800) 368-6667

All rights reserved. AMA Analytical Services, Inc.

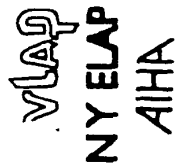




Analytical Services, Inc.

Electron & Optical Microscopy Services

CERTIFICATE OF ANALYSIS



Client: US Army Garrison Hawaii
Address: Director of Public Works (DPW),
Environmental Division - Building 105
APVG-GWV
Job Name: Batch 000501-1
Job Location: Not Provided
Job Number: DO#0002 (CLIN#-0002AF/172)
P.O. Number: DAPCS0-00-D-0007
Chain Of Custody: 70252
Date Analyzed: 5/16/00
Person Submitting: Date Kanchisa
Report Date: 17-May-00
Attention: Steve Ozoa

Page 8 of 10

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft ²)	Reporting Limit	Final Result	Comments
0034031	WAAF-1331A-E2	Flame	Paint Chip	***	N/A	0.05 %Pb	4.31 %Pb	
0034032	WAAF-1331A-E3	Flame	Paint Chip	***	N/A	0.05 %Pb	6.91 %Pb	
0034033	WAAF-1331A-E4	Flame	Paint Chip	***	N/A	0.05 %Pb	9.18 %Pb	
0034034	WAAF-1331A-E9	Flame	Paint Chip	***	N/A	0.05 %Pb	3.10 %Pb	
0034035	WAAF-1331A-L2	Flame	Paint Chip	***	N/A	0.05 %Pb	2.28 %Pb	
0034036	WAAF-1331A-L3	Flame	Paint Chip	***	N/A	0.05 %Pb	0.12 %Pb	
0034037	WAAF-1331A-S1	Flame	Paint Chip	***	N/A	0.05 %Pb	< 0.05 %Pb	
0034038	WAAF-1343C-E1	Flame	Paint Chip	***	N/A	0.05 %Pb	< 0.05 %Pb	
0034039	WAAF-1343C-E2	Flame	Paint Chip	***	N/A	0.05 %Pb	5.93 %Pb	
0034040	WAAF-1343C-E3	Flame	Paint Chip	***	N/A	0.05 %Pb	0.10 %Pb	
0034041	WAAF-1343C-F4	Flame	Paint Chip	***	N/A	0.05 %Pb	4.89 %Pb	
0034042	WAAF-1343C-E9	Flame	Paint Chip	***	N/A	0.05 %Pb	1.23 %Pb	
0034043	WAAF-1343C-L1	Flame	Paint Chip	***	N/A	0.05 %Pb	< 0.05 %Pb	
0034044	WAAF-1343C-L2	Flame	Paint Chip	***	N/A	0.05 %Pb	6.41 %Pb	
0034045	WAAF-1343C-L3	Flame	Paint Chip	***	N/A	0.05 %Pb	3.81 %Pb	
0034046	WAAF-1343C-S1	Flame	Paint Chip	***	N/A	0.05 %Pb	< 0.05 %Pb	
0034047	WAAF-1350B-E1	Flame	Paint Chip	***	N/A	0.05 %Pb	0.11 %Pb	
0034048	WAAF-1350B-E2	Flame	Paint Chip	***	N/A	0.05 %Pb	2.93 %Pb	
0034049	WAAF-1350B-E3	Flame	Paint Chip	***	N/A	0.05 %Pb	1.51 %Pb	

This report applies only to the sample, or samples, investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a mutual protection to clients, the public and these Laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization from us. Sample types, locations and collection protocols are based upon the information provided by the persons submitting them and, unless collected by personnel of these Laboratories, we expressly disclaim any knowledge and liability for the accuracy and completeness of this information. Residual sample material will be discarded in accordance with the appropriate regulatory guidelines, unless otherwise requested by the client. NVLAP Accreditation applies only to polarized light microscopy of bulk samples and transmission electron microscopy of air samples.

An AIHA (#8863), NVLAP (#1143), & New York ELAP (#10920) Accredited Laboratory

4475 Forbes Blvd., Lanham, MD 20706 • (301) 459-2640 • Toll Free (800) 342-6061

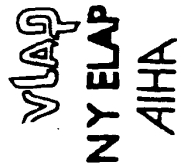
All rights reserved. AMA Analytical Services, Inc.



Analytical Services, Inc.

Electron & Optical Microscopy Services

CERTIFICATE OF ANALYSIS



Client: U.S. Army Garrison Hawaii
Address: Director of Public Works (DPW),
Environmental Division - Building 105
APVG-GWV
Job Name: Batch 000503-1
Job Location: Not Provided
Chain Of Custody: 70252
Date Analyzed: 5/16/00
Job Number: DOH0002 (CLIN#-0002AF/172)
P.O. Number: DAPC50-00-D-0007
Person Submitting: Date Kanichisa
Report Date: 17-May-00
Attention: Steve Ozon

Page 9 of 10

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft ²)	Reporting Limit	Final Result	Comments
0034050	WAAF-1350B-E4	Flame	Paint Chip	0.05	N/A	0.05 %Pb	0.98 %Pb	
0034051	WAAF-1350B-E9	Flame	Paint Chip	0.05	N/A	0.05 %Pb	2.57 %Pb	
0034052	WAAF-1350B-L1	Flame	Paint Chip	0.05	N/A	0.05 %Pb	< 0.05 %Pb	
0034053	WAAF-1350B-L2	Flame	Paint Chip	0.05	N/A	0.05 %Pb	7.09 %Pb	
0034054	WAAF-1350B-L3	Flame	Paint Chip	0.05	N/A	0.05 %Pb	0.13 %Pb	
0034055	WAAF-1350B-S1	Flame	Paint Chip	0.05	N/A	0.05 %Pb	0.07 %Pb	
0034056	WAAF-1354E-E1	Flame	Paint Chip	0.05	N/A	0.05 %Pb	0.16 %Pb	
0034057	WAAF-1354E-E2	Flame	Paint Chip	0.05	N/A	0.05 %Pb	5.66 %Pb	
0034058	WAAF-1354E-E3	Flame	Paint Chip	0.05	N/A	0.05 %Pb	1.00 %Pb	
0034059	WAAF-1354E-E4	Flame	Paint Chip	0.05	N/A	0.05 %Pb	4.91 %Pb	
0034060	WAAF-1354E-E9	Flame	Paint Chip	0.05	N/A	0.05 %Pb	0.68 %Pb	
0034061	WAAF-1354E-L1	Flame	Paint Chip	0.05	N/A	0.05 %Pb	< 0.05 %Pb	
0034062	WAAF-1354E-L2	Flame	Paint Chip	0.05	N/A	0.05 %Pb	0.78 %Pb	
0034063	WAAF-1354E-L3	Flame	Paint Chip	0.05	N/A	0.05 %Pb	0.10 %Pb	
0034064	WAAF-1354E-S1	Flame	Paint Chip	0.05	N/A	0.05 %Pb	< 0.05 %Pb	
0034065	WAAF-1338A-E2	Flame	Paint Chip	0.05	N/A	0.05 %Pb	3.50 %Pb	
0034066	WAAF-1338A-E3	Flame	Paint Chip	0.05	N/A	0.05 %Pb	0.81 %Pb	
0034067	WAAF-1338A-E9	Flame	Paint Chip	0.05	N/A	0.05 %Pb	0.25 %Pb	
0034068	WAAF-1338A-L1	Flame	Paint Chip	0.05	N/A	0.05 %Pb	< 0.05 %Pb	

This report applies only to the sample, or samples, investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a mutual protection to clients, the public and these Laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization from us. Sample types, locations and collection protocols are based upon the information provided by the persons submitting them and, unless collected by personnel of these Laboratories, we expressly disclaim any knowledge and liability for the accuracy and completeness of this information. Residual sample material will be discarded in accordance with the appropriate regulatory guidelines, unless otherwise requested by the client. NVLAP Accreditation applies only to polarized light microscopy of bulk samples and transmission electron microscopy of air samples.

An AIHA (#8863), NVLAP (#10920) Accredited Laboratory
4475 Forbes Blvd., Lanham, MD 20706-3011 459-2640 Toll Free (800) 336-0961 Fax (301) 459-2640

All rights reserved AMA Analytical Services, Inc.

Client: US Army Garrison Hawaii

Address: Director of Public Works (DPW),
Environmental Division - Building 105
APVG-GWV

Wheeler Army Airfield, Hawaii 96857-5000

Attention: Steve Ozoa

Job Name:

Job Location:

Job Number:

P.O. Number:

Date: 000503-1

Not Provided

DO#0002 (CLIN#-0002AF/172)

DAPC-50-00-D-0007

Chain Of Custody: 70252

Date Analyzed: 5/16/00

Person Submitting: Dale Kanehisa

Report Date: 17-May-00

Page 10 of 10

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft ²)	Reporting Limit	Final Result	Comments
-------------------	----------------------	---------------	-------------	----------------	-------------------------------	-----------------	--------------	----------

0034069 WAAF-1338A-S1 Flame Paint Chip ***

Analysis Method for Flame (Wipes, Paints, Aurs and Soil/Solids) EPA 600/R-93/200(M)-7420

Analysis Method For Furnace: Air: EPA 600/R-93/200(M)-7421, Water: EPA 200.9

N/A = Not Applicable mg/Kg = parts per million (ppm) by weight

%Pb = percent lead by weight ug = micrograms ug/L = parts per billion (ppb)

Note: All results have two significant digits. Any additional digits shown should not be considered when interpreting the result.

Analyst: Young-Sil Yang/John Contreras

Technical Manager: G Edward Carney

This report applies only to the sample, or samples, investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a mutual protection to clients, the public and these Laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization from us. Sample types, locations and collection protocols are based upon the information provided by the persons submitting them and, unless collected by personnel of these Laboratories, we expressly disclaim any knowledge and liability for the accuracy and completeness of this information. Residual sample material will be discarded in accordance with the appropriate regulatory guidelines, unless otherwise requested by the client. NVLAP Accreditation applies only to polarized light microscopy of bulk samples and transmission electron microscopy of air samples.

An AIHA (#8863), NVLAP (#1143), & New York ELAP (#10920) Accredited Laboratory
4475 Forbes Blvd., Lanham MD 20706-7011

All rights reserved. AMA Analytical Services, Inc.

Appendix D

Laboratory and Inspector Certificates

The American Industrial Hygiene Association

is proud to acknowledge that

AMA Analytical Services, Inc. Lanham, MD

has fulfilled the requirements for and has been formally recognized by AIHA
and is technically competent to perform the analyses listed in the following

SCOPE OF ACCREDITATION

INDUSTRIAL HYGIENE

Originally Accredited: 03/01/84

___ Metals ___ Silica
X Asbestos PCM ___ Asbestos PLM
___ Organic Solvents ___ Diffusive Samples

ENVIRONMENTAL LEAD

Originally Accredited: 10/20/96

X Paint Chips X Air
X Dust Wipes X Soil

ENVIRONMENTAL MICROBIOLOGY

___ Bacteria
___ Fungi

The above named laboratory agrees to perform all analyses listed above in the scope of accreditation according to applicable policy requirements and acknowledges that continued accreditation is dependent on successful participation in the appropriate proficiency testing programs. This laboratory may be contacted to verify the current scope of accreditation, proficiency testing performance and accreditation status. Accreditation by AIHA is not a guarantee of the validity of the data generated by the laboratory.

Laboratory ID# 8863

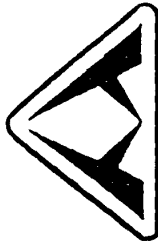
Certificate # 244

Accreditation Expires: 10/20/02

Christine A. Kearney
Christine A. Kearney
Chair, Analytical Accreditation Board



James R. Thornton
James R. Thornton, CIH, CSP
President, AIHA



MURANAKA ENVIRONMENTAL CONSULTANTS, INC.

Training Certificate

This is to certify that

DALE KANEHISA

has successfully completed the

LEAD RISK ASSESSOR REFRESHER COURSE

*based on the U.S. Environmental Protection Agency Model Course Curriculum and
the U.S. Environmental Protection Agency 40 CFR Part 745*

Lead; Requirements for Lead-Based Paint Activities in Target Housing & Child-Occupied Facilities


Certificate number: MEC-LRA-103098-04

May 25, 1999

Date of Attendance

Training Provider:

Muranaka Environmental Consultants, Inc.
500 Ala Kawa Street, Building 220, 2nd Floor
Honolulu, Hawaii 96817
Phone: (808) 848-8866
Fax: (808) 847-5267


Mark T. Muranaka, M.S., M.P.H.
President



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OFFICE OF
PREVENTION, PESTICIDES AND
TOXIC SUBSTANCES

PROOF OF CERTIFICATION FOR: Risk Assessor

**PLEASE USE THIS LETTER & A PHOTO ID
AS PROOF OF EPA CERTIFICATION AT JOB SITES
UNTIL YOU RECEIVE YOUR FORMAL EPA CERTIFICATION.**

March 3, 2000

Dale Kanehisa
95-1053 Ulahea St.
Mililani, HI 96789

Dear Mr. Kanehisa :

Thank you for submitting your application for individual certification to conduct lead-based paint activities in target housing and child-occupied facilities in accordance with Section 402 of the Toxic Substances Control Act (TSCA). Your application has been reviewed for administrative completeness and determined to be complete.

Since your application was received by EPA, your course completion certificate which serves as interim certification or your certification from an authorized State has expired or will expire in the near future. This letter will serve as "proof of certification" until you have received final EPA certification. When you are performing lead-based paint activities for which you must be certified, you are required to have "proof of certification" with you at the job site. Until you receive your official EPA badge, you may present this letter and some form of photo identification as "proof of certification." Once you receive final certification, this "proof of certification" letter will no longer be valid.

Internet Address (URL) • <http://www.epa.gov>

Recycled/Recyclable • Printed with Vegetable Oil Based Inks on Recycled Paper (Minimum 25% Postconsumer)

Appendix E

Chain of Custody Forms

Directorate of Public Works, Environmental Division Bldg 105, Wheeler Army Airfield U. S. Army Garrison, Hawaii (APVG-GWV) 101st Field Barracks, HI 96857-5013 Tel: (808) 656-2878 ext. 1036 Fax: (808) 656-1039 POC: Dale Kanehisa	AMA Batch #70252 <h2 style="margin: 0;">Chain of Custody Record</h2> <div style="margin-top: 20px;"> <i>Months in</i> <i>5/17</i> </div> DAPC50-00-D-0007 DO# 0002 CLIN#- 0002AF Batch 000503-1 Sheet 1 of 7
Date Samples Shipped: May 3, 2000 Date Analysis Required: <u>8 Working Days After Shipment Date</u> (PLEASE FAX COPY OF CHAIN UPON RECEIPT OF SAMPLES)	

Lab ID Number	Sample Number	PLM Asbestos (Bulk)	Lead (paint)	Lead (soil)	Lead (dust)	Lead (TCLP)	Sampling		Sample Description	Sample Container	Remarks (sample preservation, handling procedures, etc.)
							Date	Time			
	WAAF-1388D-E1		X				4/26	1000	light brown paint chip	zip bag	Please report results for paint in weight percentage
	WAAF-1388D-E2		X				4/26	1000	yellow paint chip	zip bag	
	WAAF-1388D-E3		X				4/26	1000	off-white paint chip	zip bag	
	WAAF-1388D-E4		X				4/26	1000	light brown paint chip	zip bag	
	WAAF-1388D-E9		X				4/26	1000	tan paint chip	zip bag	
	WAAF-1388D-L1		X				4/26	1000	light brown paint chip	zip bag	
	WAAF-1388D-L2		X				4/26	1000	tan paint chip	zip bag	
	WAAF-1388D-L3		X				4/26	1000	brown paint chip	zip bag	
	WAAF-1388D-S1		X				4/26	1000	tan paint chip	zip bag	
	WAAF-1375F-E1		X				4/26	1100	tan paint chip	zip bag	
	WAAF-1375F-E2		X				4/26	1100	brown paint chip	zip bag	
	WAAF-1375F-E3		X				4/26	1100	tan paint chip	zip bag	
	WAAF-1375F-E9		X				4/26	1100	brown paint chip	zip bag	
	WAAF-1375F-L1		X				4/26	1100	tan paint chip	zip bag	Bill shipping for this batch to 0002AL
	WAAF-1375F-L2		X				4/26	1100	cream paint chip	zip bag	
	WAAF-1375F-L3		X				4/26	1100	cream paint chip	zip bag	
	WAAF-1375F-S1		X				4/26	1100	tan paint chip	zip bag	package wt. 2 lbs
	WAAF-1330C-E1		X				4/27	1000	tan paint chip	zip bag	
	WAAF-1330C-E2		X				4/27	1000	mustard paint chip	zip bag	
	WAAF-1330C-E3		X				4/27	1000	off-white paint chip	zip bag	
	WAAF-1330C-E4		X				4/27	1000	mustard paint chip	zip bag	
	WAAF-1330C-E9		X				4/27	1000	mustard paint chip	zip bag	
	WAAF-1330C-L1		X				4/27	1000	tan paint chip	zip bag	
	WAAF-1330C-L2		X				4/27	1000	mustard paint chip	zip bag	
	WAAF-1330C-L3		X				4/27	1000	mustard paint chip	zip bag	
Total number of samples								25			

Sampler(s): D. Kanehisa			
RELINQUISHED BY: <i>[Signature]</i> <i>5/3/00</i> <i>10:15 am</i>		RELINQUISHED BY: _____ Date/Time _____	
RECEIVED BY: _____ Date/Time _____		RECEIVED BY: _____ Date/Time _____	
SHIPPED BY: _____ Date/Time _____		LABORATORY: _____ Date/Time _____	
(Signature)		(Signature)	
COURIER: _____ Date/Time _____		via FEDEX	
(Signature)		(Signature)	

Directorate of Public Works, Environmental Division

Bldg 105, Wheeler Army Airfield

U.S. Army Garrison, Hawaii (APVG-GWV)

Offfield Barracks, HI 96857-5013

Phone: (808) 656-2878 ext. 1036

Fax: (808) 656-1039

POC: Dale Kanehisa

Chain of Custody Record

CLIN#- 0002AF

Batch 000503-1

Sheet 2 of 7

Date Samples Shipped: May 3, 2000

Date Analysis Required: 8 Working Days After Shipment Date

Lab ID Number	Sample Number	PLM Asbestos (Bulk)	Lead (paint)	Lead (soil)	Lead (dust)	Lead (TCCLP)	Sampling		Sample Description	Sample Container	Remarks (sample preservation, handling procedures, etc.)
							Date	Time			
	WAAF-1330C-S1		X				4/27	1000	mustard paint chip	zip bag	Please report results for paint in weight percentage
	WAAF-1332C-E1		X				4/27	1100	tan paint chip	zip bag	
	WAAF-1332C-E2		X				4/27	1100	gray paint chip	zip bag	
	WAAF-1332C-E3		X				4/27	1100	off-white paint chip	zip bag	
	WAAF-1332C-E4		X				4/27	1100	yellow paint chip	zip bag	
	WAAF-1332C-E9		X				4/27	1100	yellow paint chip	zip bag	
	WAAF-1332C-L1		X				4/27	1100	tan paint chip	zip bag	
	WAAF-1332C-L2		X				4/27	1100	yellow paint chip	zip bag	
	WAAF-1332C-L3		X				4/27	1100	yellow paint chip	zip bag	
	WAAF-1332C-S1		X				4/27	1100	mustard paint chip	zip bag	
	WAAF-1360A-E1		X				4/27	1130	tan paint chip	zip bag	Bill shipping for this batch to 0002AL
	WAAF-1360A-E2		X				4/27	1130	pink paint chip	zip bag	
	WAAF-1360A-E3		X				4/27	1130	off-white paint chip	zip bag	
	WAAF-1360A-E4		X				4/27	1130	mustard paint chip	zip bag	
	WAAF-1360A-E9		X				4/27	1130	yellow paint chip	zip bag	
	WAAF-1360A-L2		X				4/27	1130	mustard paint chip	zip bag	
	WAAF-1360A-L3		X				4/27	1130	brown paint chip	zip bag	
	WAAF-1360A-S1		X				4/27	1130	mustard paint chip	zip bag	
	WAAF-1364B-E1		X				5/1	1000	tan paint chip	zip bag	
	WAAF-1364B-E2		X				5/1	1000	brown paint chip	zip bag	
	WAAF-1364B-E3		X				5/1	1000	off-white paint chip	zip bag	
	WAAF-1364B-E4		X				5/1	1000	brown paint chip	zip bag	
	WAAF-1364B-E9		X				5/1	1000	brown paint chip	zip bag	
	WAAF-1364B-L1		X				5/1	1000	tan paint chip	zip bag	
	WAAF-1364B-L2		X				5/1	1000	brown paint chip	zip bag	
Total number of samples								25			

Directorate of Public Works, Environmental Division

Bldg 105, Wheeler Army Airfield

U.S. Army Garrison, Hawaii (APV(G-GWV))

hofield Barracks, HI 96857-5013

tel: (808) 656-2878 ext. 1036 Fax: (808) 656-1039

POC: Dale Kanchisa

Chain of Custody Record

CLIN#- 0002AF

Batch 000503-1

Sheet 3 of 7

Date Samples Shipped: May 3, 2000

Date Analysis Required: 8 Working Days After Shipment Date

Lab ID Number	Sample Number	PLM Asbestos (Bulk)	Lead (paint)	Lead (soil)	Lead (dust)	Lead (TCLP)	Sampling		Sample Description	Sample Container	Remarks (sample preservation, handling procedures, etc.)
							Date	Time			
	WAAF-1364B-L3		X				5/1	1000	brown paint chip	zip bag	Please report results for paint in weight percentage
	WAAF-1364B-S1		X				5/1	1000	brown paint chip	zip bag	
	WAAF-1368E-E1		X				5/1	1020	cream paint chip	zip bag	
	WAAF-1368E-E2		X				5/1	1020	brown paint chip	zip bag	
	WAAF-1368E-E3		X				5/1	1020	off-white paint chip	zip bag	
	WAAF-1368E-E4		X				5/1	1020	mustard paint chip	zip bag	
	WAAF-1368E-E9		X				5/1	1020	mustard paint chip	zip bag	
	WAAF-1368E-L1		X				5/1	1020	cream paint chip	zip bag	
	WAAF-1368E-L2		X				5/1	1020	brown paint chip	zip bag	
	WAAF-1368E-L3		X				5/1	1020	brown paint chip	zip bag	
	WAAF-1368E-S1		X				5/1	1020	mustard paint chip	zip bag	
	WAAF-1341B-E1		X				5/1	1045	tan paint chip	zip bag	Bill shipping for this batch to 0002AL
	WAAF-1341B-E2		X				5/1	1045	brown paint chip	zip bag	
	WAAF-1341B-E3		X				5/1	1045	off-white paint chip	zip bag	
	WAAF-1341B-E4		X				5/1	1045	brown paint chip	zip bag	
	WAAF-1341B-E9		X				5/1	1045	light brown paint chip	zip bag	
	WAAF-1341B-L1		X				5/1	1045	tan paint chip	zip bag	
	WAAF-1341B-L2		X				5/1	1045	brown paint chip	zip bag	
	WAAF-1341B-L3		X				5/1	1045	brown paint chip	zip bag	
	WAAF-1341B-S1		X				5/1	1045	tan paint chip	zip bag	
	WAAF-1363A-E1		X				5/1	1115	tan paint chip	zip bag	
	WAAF-1363A-E2		X				5/1	1115	brown paint chip	zip bag	
	WAAF-1363A-E3		X				5/1	1115	off-white paint chip	zip bag	
	WAAF-1363A-E4		X				5/1	1115	brown paint chip	zip bag	
	WAAF-1363A-E9		X				5/1	1115	light brown paint chip	zip bag	
Total number of samples								25			

Directorate of Public Works, Environmental Division

Bldg. 105, Wheeler Army Airfield

U S Army Garrison, Hawaii (APVG-GWV)

hofield Barracks. HI 96857-5013

n: (808) 656-2878 ext. 1036 Fax: (808) 656-1039

POC: Dale Kanehisa

Chain of Custody Record

CLIN#- 0002AF

Batch 000503-1

Sheet 4 of 7

Date Samples Shipped: May 3, 2000

Date Analysis Required: 8 Working Days After Shipment Date

Lab ID Number	Sample Number	PLM Asbestos (Bulk)	Lead (paint)	Lead (soil)	Lead (dust)	Lead (TCLP)	Sampling		Sample Description	Sample Container	Remarks (sample preservation, handling procedures, etc.)
							Date	Time			
	WAAF-1363A-L1	X					5/1	1115	tan paint chip	zip bag	Please report results for paint in weight percentage
	WAAF-1363A-L2	X					5/1	1115	brown paint chip	zip bag	
	WAAF-1363A-L3	X					5/1	1115	brown paint chip	zip bag	
	WAAF-1363A-S1	X					5/1	1115	brown paint chip	zip bag	
	WAAF-1372E-E1	X					5/1	1150	tan paint chip	zip bag	
	WAAF-1372E-E2	X					5/1	1150	yellow paint chip	zip bag	
	WAAF-1372E-E3	X					5/1	1150	off-white paint chip	zip bag	
	WAAF-1372E-E4	X					5/1	1150	yellow paint chip	zip bag	
	WAAF-1372E-E9	X					5/1	1150	yellow paint chip	zip bag	
	WAAF-1372E-L1	X					5/1	1150	tan paint chip	zip bag	
	WAAF-1372E-L2	X					5/1	1150	yellow paint chip	zip bag	Bill shipping for this batch to 0002AL
	WAAF-1372E-L3	X					5/1	1150	brown paint chip	zip bag	
	WAAF-1372E-S1	X					5/1	1150	mustard paint chip	zip bag	
	WAAF-1380A-E1	X					5/2	915	cream paint chip	zip bag	
	WAAF-1380A-E2	X					5/2	915	mauve paint chip	zip bag	
	WAAF-1380A-E3	X					5/2	915	off-white paint chip	zip bag	
	WAAF-1380A-E4	X					5/2	915	mustard paint chip	zip bag	
	WAAF-1380A-E9	X					5/2	915	mustard paint chip	zip bag	
	WAAF-1380A-L2	X					5/2	915	mustard paint chip	zip bag	
	WAAF-1380A-L3	X					5/2	915	brown paint chip	zip bag	
	WAAF-1380A-S1	X					5/2	915	mustard paint chip	zip bag	
	WAAF-1391E-E1	X					5/2	935	tan paint chip	zip bag	
	WAAF-1391E-E2	X					5/2	935	white paint chip	zip bag	
	WAAF-1391E-E3	X					5/2	935	off-white paint chip	zip bag	
	WAAF-1391E-E4	X					5/2	935	mustard paint chip	zip bag	
Total number of samples							25				

Directorate of Public Works, Environmental Division

Bldg. 105, Wheeler Army Airfield

U.S. Army Garrison, Hawaii (APVG-GWV)

hofield Barracks, HI 96857-5013

n: (808) 656-2878 ext. 1036 Fax: (808) 656-1039

POC: Dale Kanehisa

Chain of Custody Record

CLIN#- 0002AF

Batch 000503-1

Sheet 5 of 7

Date Samples Shipped: May 3, 2000

Date Analysis Required: 8 Working Days After Shipment Date

Lab ID Number	Sample Number	PLM Asbestos (Bulk)	Lead (paint)	Lead (soil)	Lead (dust)	Lead (TCCLP)	Sampling		Sample Description	Sample Container	Remarks (sample preservation, handling procedures, etc.)
							Date	Time			
	WAAF-1391E-E9	X					5/2	935	yellow paint chip	zip bag	Please report results for paint in weight percentage
	WAAF-1391E-L1	X					5/2	935	tan paint chip	zip bag	
	WAAF-1391E-L2	X					5/2	935	yellow paint chip	zip bag	
	WAAF-1391E-L3	X					5/2	935	yellow paint chip	zip bag	
	WAAF-1391E-S1	X					5/2	935	mustard paint chip	zip bag	
	WAAF-1390A-E1	X					5/2	1015	cream paint chip	zip bag	
	WAAF-1390A-E2	X					5/2	1015	maroon paint chip	zip bag	
	WAAF-1390A-E3	X					5/2	1015	off-white paint chip	zip bag	
	WAAF-1390A-E4	X					5/2	1015	mustard paint chip	zip bag	
	WAAF-1390A-E9	X					5/2	1015	mustard paint chip	zip bag	
	WAAF-1390A-L1	X					5/2	1015	white paint chip	zip bag	
	WAAF-1390A-L2	X					5/2	1015	white paint chip	zip bag	
	WAAF-1390A-L3	X					5/2	1015	white paint chip	zip bag	
	WAAF-1390A-S1	X					5/2	1015	mustard paint chip	zip bag	Bill shipping for this batch to 0002AL
	WAAF-1385D-E1	X					5/2	1045	tan paint chip	zip bag	
	WAAF-1385D-E2	X					5/2	1045	brown paint chip	zip bag	
	WAAF-1385D-E3	X					5/2	1045	off-white paint chip	zip bag	
	WAAF-1385D-E4	X					5/2	1045	brown paint chip	zip bag	
	WAAF-1385D-E9	X					5/2	1045	brown paint chip	zip bag	
	WAAF-1385D-L1	X					5/2	1045	cream paint chip	zip bag	
	WAAF-1385D-L2	X					5/2	1045	brown paint chip	zip bag	
	WAAF-1385D-L3	X					5/2	1045	brown paint chip	zip bag	
	WAAF-1385D-S1	X					5/2	1045	brown paint chip	zip bag	
	WAAF-1377C-E1	X					5/2	1100	tan paint chip	zip bag	
	WAAF-1377C-E2	X					5/2	1100	yellow paint chip	zip bag	
Total number of samples								25			

Directorate of Public Works, Environmental Division

Bldg. 105, Wheeler Army Airfield

U.S. Army Garrison, Hawaii (APVG-GWV)

Hofield Barracks, III 96857-5013

Tel: (808) 656-2878 ext. 1036 Fax: (808) 656-1039

POC: Dale Kanchisa

Chain of Custody Record

CLIN#- 0002AF

Batch 000503-1

Sheet 6 of 7

Date Samples Shipped: May 3, 2000

Date Analysis Required: 8 Working Days After Shipment Date

Lab ID Number	Sample Number	PLM Asbestos (Bulk)	Lead (paint)	Lead (soil)	Lead (dust)	Lead (TCLP)	Sampling		Sample Description	Sample Container	Remarks (sample preservation, handling procedures, etc.)
							Date	Time			
	WAAF-1377C-E3	X					5/2	1100	off-white paint chip	zip bag	Please report results for paint in weight percentage
	WAAF-1377C-E4	X					5/2	1100	yellow paint chip	zip bag	
	WAAF-1377C-E9	X					5/2	1100	yellow paint chip	zip bag	
	WAAF-1377C-L1	X					5/2	1100	tan paint chip	zip bag	
	WAAF-1377C-L2	X					5/2	1100	yellow paint chip	zip bag	
	WAAF-1377C-L3	X					5/2	1100	brown paint chip	zip bag	
	WAAF-1377C-S1	X					5/2	1100	yellow paint chip	zip bag	
	WAAF-1331A-E1	X					5/2	1130	tan paint chip	zip bag	
	WAAF-1331A-E2	X					5/2	1130	yellow paint chip	zip bag	
	WAAF-1331A-E3	X					5/2	1130	off-white paint chip	zip bag	
	WAAF-1331A-E4	X					5/2	1130	yellow paint chip	zip bag	
	WAAF-1331A-E9	X					5/2	1130	yellow paint chip	zip bag	
	WAAF-1331A-L2	X					5/2	1130	yellow paint chip	zip bag	
	WAAF-1331A-L3	X					5/2	1130	off-white paint chip	zip bag	Bill shipping for this batch to 0002AL
	WAAF-1331A-S1	X					5/2	1130	mustard paint chip	zip bag	
	WAAF-1343C-E1	X					5/2	1200	cream paint chip	zip bag	
	WAAF-1343C-E2	X					5/2	1200	mauve paint chip	zip bag	
	WAAF-1343C-E3	X					5/2	1200	off-white paint chip	zip bag	
	WAAF-1343C-E4	X					5/2	1200	mustard paint chip	zip bag	
	WAAF-1343C-E9	X					5/2	1200	mustard paint chip	zip bag	
	WAAF-1343C-L1	X					5/2	1200	cream paint chip	zip bag	
	WAAF-1343C-L2	X					5/2	1200	brown paint chip	zip bag	
	WAAF-1343C-L3	X					5/2	1200	brown paint chip	zip bag	
	WAAF-1343C-S1	X					5/2	1200	brownish orange paint chip	zip bag	
	WAAF-1350B-E1	X					5/2	1230	tan paint chip	zip bag	
Total number of samples								25			

Directorate of Public Works, Environmental Division

Bldg. 105, Wheeler Army Airfield

U.S. Army Garrison, Hawaii (APVG-GWV)

Offfield Barracks, HI 96857-5013

at: (808) 656-2878 ext. 1036

Fax: (808) 656-1039

POC: Dale Kanchisa

Chain of Custody Record

Date Samples Shipped: May 3, 2000

Date Analysis Required: 8 Working Days After Shipment Date

CLIN#- 0002AF

Batch 000503-1

Sheet 7 of 7

Lab ID Number	Sample Number	PLM Asbestos (Bulk)	Lead (paint)	Lead (soil)	Lead (dust)	Lead (TCLP)	Sampling		Sample Description	Sample Container	Remarks (sample preservation, handling procedures, etc.)
							Date	Time			
	WAAF-1350B-E2		X				5/2	1230	yellow paint chip	zip bag	Please report results for paint in weight percentage
	WAAF-1350B-E3		X				5/2	1230	off-white paint chip	zip bag	
	WAAF-1350B-E4		X				5/2	1230	mustard paint chip	zip bag	
	WAAF-1350B-E9		X				5/2	1230	yellow paint chip	zip bag	
	WAAF-1350B-L1		X				5/2	1230	tan paint chip	zip bag	
	WAAF-1350B-L2		X				5/2	1230	mustard paint chip	zip bag	
	WAAF-1350B-L3		X				5/2	1230	brown paint chip	zip bag	
	WAAF-1350B-S1		X				5/2	1230	mustard paint chip	zip bag	
	WAAF-1354E-E1		X				5/2	1250	tan paint chip	zip bag	
	WAAF-1354E-E2		X				5/2	1250	brown paint chip	zip bag	
	WAAF-1354E-E3		X				5/2	1250	off-white paint chip	zip bag	Bill shipping for this batch to 0002AL
	WAAF-1354E-E4		X				5/2	1250	brown paint chip	zip bag	
	WAAF-1354E-E9		X				5/2	1250	brown paint chip	zip bag	
	WAAF-1354E-L1		X				5/2	1250	tan paint chip	zip bag	
	WAAF-1354E-L2		X				5/2	1250	brown paint chip	zip bag	
	WAAF-1354E-L3		X				5/2	1250	brown paint chip	zip bag	
	WAAF-1354E-S1		X				5/2	1250	brown paint chip	zip bag	
	WAAF-1338A-E2		X				5/3	900	brown paint chip	zip bag	
	WAAF-1338A-E3		X				5/3	900	off-white paint chip	zip bag	
	WAAF-1338A-E9		X				5/3	900	brown paint chip	zip bag	
	WAAF-1338A-L1		X				5/3	900	off-white paint chip	zip bag	
	WAAF-1338A-S1		X				5/3	900	mustard paint chip	zip bag	
Total number of samples								22			